

# TENDER NOTICE

PROPOSED AIR CONDITIONING WORKS FOR ST.JHON'S BRANCH,  
UNION BANK OF INDIA  
AT KARIMANAGR, KARIMANAGR REGION, TELANGANA STATE.

TENDER ISSUED TO: M/S. \_\_\_\_\_

DATE OF ISSUE: - 23.05.2026 TO

29.05.2026 TENDERSUBMISSIONON:-

29.05.2026 till 3:00PMTENDER OPENING: -

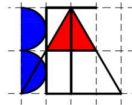
29.05.2026 AT 3:30 PM

COMPLETION PERIOD – One Month



UNION BANK OF INDIA

Regional office Karimnagar  
H No: 2-7-440/1,  
Beside Film Bhavan, Mukarampura,  
Karimnagar – 505 001,  
Ph: .



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**UNION BANK OF INDIA**  
**REGIONAL OFFICE KARIMNAGAR**  
**NOTICE OPEN TENDER**

**PROPOSED AIR CONDITIONING WORK FOR ST.JHON'S BRANCH AT KARIMNAGAR.**  
**KARIMNAGAR REGION**

1. THE UNION BANK OF INDIA through e-procurement from eligible contractors having sound, technical and financial capacity to do **AC Works for UNION BANK OF INDIA- ST.JHON'S BRANCH AT KARIMNAGAR - KARIMNAGAR REGION.**

Eligibility criteria: Should have empaneled in UBI, Karimnagar Region.

Work	EMD In form of DD
AC Works	Rs. 1,000.00/-

1. The eligible contractors/ vendors can obtain the tender documents from Union Bank of India Regional Office Karimnagar, H No – 2-7-440/1, Beside Film Bhavan, Mukarampura, Karimnagar – 505001 during working days.
2. **The bids** duly completed in all respect superscripted as tender for the respective work along with the prescribed amount of EMD, proof of empanelment should have submitted to our below mentioned office on or before the date & time of submission of tenders mentioned above. The tenders not enclosed with specified amount of EMD (in the form of DD or Banker's Cheque only) will be rejected. Bank reserves the right to accept or reject any or all the tenders without assigning any reasons, therefore.
3. Reputed contractors and interested vendors with banking experience banking/PSU make and apply or tender.
4. Contractors with Union Bank of India Regional office, Karimnagar Region interested in it shall submit their duly filled bid in sealed covers super scribing application for **TENDER FOR AC WORKS FOR ST.JHON'S BRANCH AT KARIMNAGAR -KARIMNAGAR REGION.**

**5. THE SEALED TENDERS SHOULD BE SUBMITTED TO:**

**THE UNION BANK OF INDIA**  
**Regional office Karimnagar**  
H No: 2-7-440/1,  
**Beside Film Bhavan,Mukarampura,**  
Karimnagar – 505 001

## NOTICE INVITING TENDERS

### PROPOSED AIR CONDITIONING WORK FOR ST.JHON'S BRANCH AT KARIMNAGAR. KARIMNAGAR REGION

#### APPENDIX TO GENERAL CONDITIONS OF CONTRACT

A	Tender Document Fees	Not Applicable
1	Earnest Money Deposit (EMD)	Rs: 99,175.00/-
2	Earnest Money Deposit (EMD)	Rs: 1,000.00/-
<b>3</b>	Period of Completion	<b>One Month</b>
4	Defect Liability Period	One year after completion as recorded in the completion certificate / final bill
5	Agreed Liquidated Damages	1% of Contract amount per week of delay subjected to a maximum of 10% of contract value
6	Period of Final Measurements	<b>15 days</b> 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 - 75%
8	Retention money from each bill	5 % of gross value of each interim bill,
9	Total security deposit	5 % of the contract value
10	Release of Security deposit after virtual completion	After the defect liability period which is <b>12 MONTHS</b> as the case may be
11	Period for honoring certificate for making payment	5 working days from date of Architects certificate of payment for interim bills and 15 working days for final certificate.

**SECTION – 1**  
**INSTRUCTIONS TO THE TENDERS**

**1.0 Scope of work**

Sealed tenders are invited by Union Bank of India **REGIONAL OFFICE KARIMNAGAR – AC WORKS FOR ST.JHON’S BRANCH AT KARIMNAGAR -KARIMNAGAR REGION.**

- ❖ **Bid:** Shall contain prescribed EMD, forwarding letter accepting conditions of contract. Biodata of site engineer to be engaged on site, Income Tax Clearance and Sales Tax clearance certificates.
- ❖ The tenders not Enclosed with specified amount of EMD (in the form of DD or Banker’s cheque only) will be rejected. Bank reserves the right to accept or reject any or all the tenders without assigning any reasons there for.

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

- Instructions to tenderers
- General conditions of Contract
- Special conditions of Contract
- Additional specifications
- Drawings
- Technical bid

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

- a) Technical bid
- b) Additional Specifications
- c) Technical Specifications
- d) Drawings
- e) Special conditions of contract
- f) General conditions of contract
- g) Instructions to Tenderers

Complete set of tender documents including relative drawings can be obtained in person from the Union Bank of India between 00-00 to 00-00 hrs on any Day except holidays during the period mentioned in the Notice Inviting Tender.

The tender Documents are not transferable.

CONTRACTOR WHO IS MATCHING CRITERIA MAY CAN APPLY for Bid.

### **Site Visit**

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

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

### **Earnest Money**

The tenderers are requested to submit the Earnest Money of **Rs.1,000.00/- (One Thousand Only)** in the form of Demand Draft or Bankers Cheque Drawn on any Nationalised Bank in India, KARIMNAGAR.

EMD in any other form other than as specified above will not be accepted. Tender not accompanied by the EMD in Accordance with S. No. 3 above shall be rejected. No interest will be paid on the EMD. EMD of unsuccessful tenderers will be refunded within 30 days of award of contract. EMD of successful tenderer will be retained as a part of security deposit.

### **Security Deposit**

8% of the bill value will be deducted from respective running bills as security retention. Bank will retain 5% of the total bill value as retention money/security deposit till completion of defects liability period i.e. 12 months. Remaining retention money will be paid along with final bill payment so that only 5% of the total bill value shall be kept as retention money.

The Retention Money/Security Deposit would be paid to the contractors after the defects liability period of 12 months. No interest shall be paid to the amount retained by the Union

Bank of India security Deposit.

### **Signing of contract Documents**

The successful tenderers shall be bound to implement the contract by signing an agreement and conditions of contract attached herewith within 15 days from the receipt of intimation of acceptance of his tender by the Union Bank of India. However, the written acceptance of the tender by the Union Bank of India will constitute binding agreement between the Union Bank of India and successful tenderer whether such formal agreement is subsequently entered into or not.

### **Completion Period**

Time is essence of the contract. The work should be completed in all respects in accordance with the terms of contract within a period of **One Month** from the date of handing over site or 10 days from the date of receipt of letter of acceptance whichever is later.

### **Validity of tender**

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

### **Liquidated Damages**

The liquidated damages shall be 1% per week subject to a maximum of 10% of contract value.

### **Rate and prices:**

#### **In case of item rate tender**

The tenderers shall quote their rates for individual items both in words and figures in case of discrepancy between the rate quoted in words and figures the unit rate quoted in words will prevail. If no rate is quoted for a particular item, the contractor shall not be paid for that item when it is executed.

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

The tenderers need not quote their rates for which no quantities have been given. In case the tenderers quote their rates for such items those rates will be ignored and will not be considered during execution.

The tenderers should not change the units as specified in the tender. If any unit is changed the tenders would be evaluated as per the original unit and the contractor would be paid accordingly.

The tenderer should not change or modify or delete the description of the item. If any discrepancy is observed, they should immediately bring to the knowledge of the Architect/ Bank.

Each page of the BOQ shall be signed by the authorised person and cutting or over writing shall be duly attested by him/her.

Each page shall be totaled and the grand total shall be given.

The rate quoted shall be firm and shall include all costs, allowances, taxes, levies.

### **INSTRUCTIONS TO TENDERERS:**

All the rates shall be filled up in figures as well as words without fail.

The rates and amount against each item of work shall be filled up only in tender papers issued to the tenderers.

The tenders shall be accompanied by the Earnest Money Deposit for the specified amount.

**The tenders shall be duly signed by the competent person.**

Tender will be open in prescribed format within committee and work will be awarded as per the assessment done by the bank as per the bank norms and format as per the instruction of client and architect.

No paper or sheet shall be detached from the tender document issued to the tenderers.

All the drawings shall be returned along with the tenders.

The tenders shall be liable for rejection if any of the above said requirements are not compiled with.

Water and power for construction shall be arranged by the Contractor. In case the Bank agrees to provide water, the electricity charges towards pumping of water will have to be borne by the contractor.

The client does not bind itself to accept the lowest or any tender and reserves to itself the right to accept or reject any or all the tenders, either in whole or in part without assigning any reason for doing so.

A schedule of probable quantities in respect of each work and specifications accompany these special conditions. The schedule of quantities is liable to alteration by omission, deductions or additions at the discretion of the Architects with the consent of the employer.

All items or work described in the schedule of quantities are to be deemed and paid as complete works in all respects and details including preparatory and finishing works involved, directly, related to and reasonably detectable from the drawings, specifications and schedule of quantities and no further extra charges will be allowed in this connection. In case of lump-sum charges in the tender in respect of any item of works, the payment of such items of work will be made for actual work done on the basis of lump-sum charges as will be assessed to be payable by the Employer / Architects.

The tenderers must include in their tender prices quoted for all duties royalties, cess and sale tax or any other taxes or local charges if applicable.

No extra claim on this account will in any case be entertained.

If the employer has supplied any materials or goods to the contractor, the cost of any such materials or goods will be progressively deducted from the amount due to the Contractor in accordance with the quantities consumed in the work. The Employer shall during the progress of the work have power to order in writing from time to time the removal from the work within such reasonable time or times as may be specified in the order of any materials in which in the opinion of the Employer/Architects are not in accordance with specification or instructions, the substitution or proper re-execution of any work executed with materials or workmanship not in accordance with the drawings and specifications or instructions. In case the contractor refuses to comply with the order the Employer shall have the power to employ and pay other agencies to carry out the work and all expenses consequent thereon or incidental thereto as certified by the Employer/Architects shall be borne by the Contractor or may be deducted from any money due to or that may become due to the contractor. No certificate which may be given by the architects shall

relieve the Contractor from his liability in respect of unsound work or bad materials.

All materials should be got tested by the contractor from approved laboratory and test result submitted to the employers for approval. Only those materials approved by the employers to be used at works. The cost for testing shall be borne by the contractor only.

The contractor will be made payments towards steel based on the actual quantities of steel used at site including laps mentioned in the drawings to the exact lengths.

The contractor must co-operate and co-ordinate the work with work of all other contractors appointed by the employer so that the work shall proceed with the least possible delay and to the satisfaction of the Architects. The contractor co-ordination with other contractors appointed by the employer is essential to maintain smooth progress of work and any delays, which in the opinion of the Architects/ Employer is due to non-co-ordination and inefficient management of the contractor will not be entertained for any extension of time.

No escalation of cost of materials due to any reasons will be entertained.

The contractor will observe all statutory and legal requirements as required by the central and state governments as applied to the work. He/ She shall fully indemnify the employer against any loss of property, life etc.,

Contractors shall indemnify the employer and architect against any accident on site and immediately outside causing injuries / death to any workers / visitors / third party claims under any of the statutory bodies. All insurance certificate to be provided by contractor

PF/Insurance/Taxes of contractor workers are the contractor's full responsibility.

## **GENERAL CONDITIONS OF CONTRACT**

### **Definitions:**

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

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

'Union Bank of India' shall mean **THE UNION BANK OF INDIA** (client) having its Regional office at KARIMNAGAR and includes the client's representatives, successors and assigns.

'Site Engineer' shall mean an Engineer appointed by the **Union Bank of India** their representative to give instructions to the contractors.

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

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

'Engineer' shall mean the representative of the Architect/ consultant/ Bank.

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

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

"Week" means seven consecutive days.

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

Insurance to be taken by the Contractor, 3rd party liability, All Risk Insurance Policy, Workmen Compensation.

## **CLAUSES**

### **1. Total Security Deposit**

Total Security deposit comprise of

- Earnest Money Deposit
- Retention Money

#### **a) Earnest Money Deposit:**

The tenderer shall furnish EMD of **Rs.1,000.00/- (One Thousand Only)** in the form of Demand draft drawn or Bankers Cheque Drawn on any Nationalised Bank in India in favour of Union Bank of India and **payable at Karimnagar**. No tender shall be considered

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

**b) Retention Money:**

Besides the EMD as deposited by the contractor in the above said manner the retention money shall be deducted from the running account bill at the rate of 8% of the gross value of work done by the contractor and claimed in each bill it shall be refunded to the contractors without interest within fifteen days after the end of defects liability period provided the contractor has satisfactorily attended to all defects in accordance with the conditions of contract including site clearance.

**2. Language:**

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

**Errors, omissions and discrepancies:**

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

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

**3. Scope of work:**

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

**4. i) Letter of Acceptance:**

Within the validity period of the tender the Union Bank of India shall issue a letter of acceptance either directly or through the architect by registered post or otherwise depositing at the address of the contractor as given in the tender to enter into a Contract for the execution of the work as per the terms of the tender. The letter of acceptance shall constitute a binding contract between the Union Bank of India and the contractor.

**ii) Contract Agreement:**

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

**5. Ownership of drawings:**

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

**6. Detailed drawings and instructions:**

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

The work shall be executed in conformity therewith and the contractor prepare a detailed programme schedule indicating therein the date of start and completion of various activities on receipt of the work order and submit the same to the Union Bank of India through the architect / consultant.

**7. Copies of agreement:**

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

**8. Liquidated damages:**

If the contractor fails to maintain the required progress in terms of clause 5.0 of GCC the contracted or extended date or completion without justification in support of the cause of delay, he may be called upon without prejudice to any other right of remedy available under the law to the Union Bank of India on account of such breach to pay a liquidated damage at the rate of 1% of the contract value which subject to a maximum of 10% of the contract value.

**9. Materials, Appliances and Employees:**

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

**10. Permits, Laws and Regulations:**

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

**11. Setting out Work:**

The contractor shall set out the work and shall be responsible for the true and perfect setting out of the same and for the correctness of the positions, levels, dimensions, and alignment of all parts thereof and get it approved by the architect / consultant before proceeding with the work. If at any time any error in this respect shall appear during the progress of the works, irrespective of the fact that the layout had been approved by the architect / consultant the contractor shall be responsible for the same and shall at his own expenses rectify such error, if so, required to satisfaction of the SBM.

**12. Protection of works and property:**

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

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

**13. Inspection of work:**

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

**14. Assignment and subletting**

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

**15. Quality of materials, workmanship & Test.**

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

**16. Obtaining information related to execution of work.**

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

**17. Contractor's superintendence.**

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

**Quantities**

- a) The bill of quantities (BOQ) unless or otherwise stated shall be deemed to have been prepared in accordance with the Indian Standard Method of Measurements and quantities. The rate quoted shall remain valid for variation of quantity against individual item to any extent subject to maximum variation of the contract value by 25%. All the amount paid under clause 18, 19 hereof as well as amounts of primer cost and provisional sums, if any, shall be excluded.
- b) **Variation exceeding 25%:** The items of work executed in relation to variation exceeding 25% shall be paid on the basis of provisions of clause 20 (e) hereof.

**18. Works to be measured**

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

**19. Variations**

No alteration, omission or variation ordered in writing by the Architect / consultant shall vitiate the contract. In case the Union Bank of India / Architect / Consultant thinks proper at any time during the progress of works to make any alteration in, or additions to or omissions from the works or any alteration in the kind or quality of the materials to be used therein, the Architect / Consultant shall give notice thereof in writing to the contractor or shall confirm in within seven days of giving such oral instructions the contractor shall alter to, add to, or omit from as the case may be in accordance with such notice, but the contractor shall not do any work extra to or make any alterations or additions to or omissions from the works or any deviation from any of the provisions of the contract,

stipulations, specifications or contract drawings without previous consent in writing of the Architect / Consultant and the value of such extras, alterations, additions or omissions shall in all cases be determined by the Architect / Consultant and the same shall be added to or deducted from the contract value, as the case may be.

## **20. Valuation of Variations**

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

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

## **21. Final Measurement**

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

## **22. Virtual completion certificate (VCC)**

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

- a) Clear the site of all scaffolding, wiring, pipes, surplus materials, contractor's labour, equipment and machinery.
- b) Demolish, dismantle and remove the contractor's site office, temporary works, structures including labour sheds/ camps and constructions and other items and things whatsoever brought upon or erected at the site or any land allotted to the contractor by the Union Bank of India and not incorporated in the permanent works.
- c) Remove all rubbish, debris etc. from the site and the land allotted to the contractor by the Union Bank of India and shall clear, level and dress, compact the site as required by the .
- d) Shall put the Union Bank of India in undisputed custody and possession of the site and all land allotted by the Union Bank of India.
- e) Shall hand over the work in a peaceful manner to the Union Bank of India.
- f) All defects / imperfections have been attended and rectified as pointed out by the Union Bank of India to the full satisfaction of Union Bank of India. Upon the satisfactory fulfilment by the contractor as stated above, the contractor shall be entitled to apply to the Architect / consultant is satisfied of the completion of the work. Relative to which the completion certificate has been sought, the Architect / consultant shall within Sixteen (14) days of the receipt of the application for virtual completion certificate, issue a VCC in respect of the work for which the VCC has been applied.

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

## **23. Work by other agencies.**

The Union Bank of India / Architect / consultant reserves the rights to use premises and any portion of the site for execution of any work not included in the scope of this contract which if may desire to have carried out by other persons simultaneously and the contractor

shall not only allow but also extend reasonable facilities for the execution of such work. The contractor however shall not be required to provide any plant or material for the execution of such work except by special arrangement with the Union Bank of India. Such work shall be carried out in such manner as not to impede the progress of the works included in the contract.

**24. Damage to persons and property**

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

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

**Contractor to indemnify Union Bank of India**

The contractor shall indemnify the Union Bank of India against all claims, proceedings, damages, costs, charges and expenses in respect of the matters referred to in the provision sub-clause 24 of this clause.

**25. Contractor's superintendence**

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

right is the direct result of an order passed by the Architect / consultant in this behalf.

**26. Accident or Injury to workman:**

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

**27. Commencement of Works:**

The date of commencement of the work will be reckoned as the date of handing over site or fifteen days from the date of issue of letter of acceptance of the tender by the Union Bank of India which ever is later.

**28. Time for completion**

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

**29. Extension of time**

If, in the opinion of the Architect / consultant, the work be delayed for reasons beyond the control of the contractor, the Architect / consultant may submit a recommendation to the Union Bank of India to grant a fair and reasonable extension of time for completion of work as per the terms of contract. If the contractor needs an extension of time for the completion of work or if the completion of work is likely to be delayed for any reasons beyond the due date of completion as stipulated in the contract, the contractor shall apply to the Union Bank of India through the Architect / Consultant in writing at least 10 Days before the expiry of the scheduled time and while applying for extension of time he shall furnish the reasons in detail and his justification if any, for the delays. The architect/ consultant shall submit their recommendations to the Union Bank of India in the prescribed format for granting extension of time. While granting extension of time the contractor shall be informed the period extended time, which will quality for levy of liquidated damages. For the balance period in excess of original stipulated period and duly sanctioned extension of time by the Union Bank of India the provision of liquidated damages as stated under clause 9.0 shall become applicable. Further the contract shall remain in force even for the period beyond the due date of completion irrespective whether the extension is granted or not.

**30. Rate of progress**

Whole of the materials, plant and labour to be provided by the contractor and the mode,

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

### **31. Work during nights and holidays**

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

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

### **32. No compensation or restrictions of work**

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

Provided that the contractor shall be paid the charges on the cartage only of materials actually and bonafide brought to the work by the contractor and rendered surplus as a result of the abandonment, curtailment of the work or any portion thereof and then taken back by the contractor, provided however that the Architect / Consultant shall have in such cases the option of taking over all or any such materials at their purchase price or a local current rate whichever is less.

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

### **33. Suspension of work.**

The contractor shall, on receipt of the order in writing of the Architect / consultant (whose decision shall be final and binding on the contractor) suspend the progress of works or any part thereof for such time and in such manner as Architect / consultant may consider necessary so as not to cause any damage or injury to the work already done or endanger the safety thereof for any of following reasons.

#### **34. Certificate of payment.**

The contractor shall be entitled under the certificates to be issued by the Bank's Engineer/ Architect / consultant to the contractor within 10 working days from the date to certificate to the payment from Union Bank of India from time to time. The Union Bank of India shall recover the statutory recoveries other dues including the retention amount from the certificate of payment.

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

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

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

The Union Bank of india shall modify the certificate of payment as issued by the architect / consultant from time to time while making the payment.

The contractor shall submit interim bills only after taking actual measurements and properly recorded in the M books.

The contractor shall not submit interim bills when the approximate value of work done by him is less than Rs,2,00,000/- (Rupees Two Lakhs Only) and the minimum interval between two such bills shall be 10 days.

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

## **TECHNICAL SPECIFICATIONS FOR AC WORKS**

### **A. 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 not exceed 350 mm.

The unit shall be pre charged with first charge of R 32 / R 134A / R 407 / R 410 refrigerant. Additional charge shall be added as per refrigerant piping at site.

The unit must have in built drain pump, suitable for vertical lift of 750 mm.

The unit casing shall be Galvanized Steel Plate / or as per manufacturer's specifications.

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 (To be supplied by other vendors) & it shall be possible to operate the unit through this IBMS system.

The unit shall be supplied with following from the factory with following:

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

**B. Wall Mounted Units.**

Wall mounted units must be compact & stylish design that does not detract from the Décor of the room. 44

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The unit shall be precharged with first charge of R 32 / R 134A / R 407 / R 410 refrigerant.

Additional charge shall be added as per refrigerant piping at site.

Each indoor unit must have electronic expansion valve operated by microprocessor thermostat based temperature control to deliver cooling/ heating as per the heat load of the room.

The unit must have provision of adding drain pump kit if required & specified. The drain pump must be suitable to lift drain up to 1000 mm from the bottom of the unit.

Unit must be insulated with sound absorbing thermal insulation material, polystyrene/Polyethylene foam. The noise level of unit at the highest operating level shall not exceed 46 dB(A), at a vertical distance of 1.5 m from the grille of the unit.

The unit shall be supplied with Resin Net filter with Mold Resistance. The filter shall be easy to remove, clean & re install.

The unit grille must be washable with soap solution.

It shall be possible to set minimum 5 steps of discharge angle by remote controller.

It shall be possible to fit drain pipe from either side of the unit (Left or right)

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(To be supplied by other vendors) & it shall be possible to operate the unit through this IBMS system.

The unit shall be supplied with following from the factory with following:

Operation Manual

Installation Manual

Installation panel

Paper pattern for installation

Insulation tape/ Clamps/ Screws

**A - 1: COPPER TUBING.**

The parent material used for air - conditioning system refrigerant tubing should be Copper tubes, tubes and fittings conforming to following specifications:

1. Material composition should be conforming to C-1220 (JIS-H-3300) or C-12200 (ASTM).It should have a minimum Copper content of 99.9 % and 45 Signature of Contractor

Phosphorus content between 0.015 % and 0.040 %. It should have low residue ( below 0.038 gm / sq mtr). The material should also be as per the RoHS norms specified by EU; that is, Mercury, Chromium and Lead contents below 1000 ppm, and Cadmium content below 100 ppm.

2. Physical properties of the material should conform to JIS-H-3300 or ASTM-B-68 & B-75, should be tested for Tensile / elongation / hardness / grain size tests as per ASTM B -280.

3. Dimensional tolerance should be as per JIS-H-3300 or ASTM-B-251. The tubes should be tested using non-destructive Eddy current test before the final anneal, as per JIS- H-3300 or ASTM-E-243.

4. Heat treatment should be carried out in non-oxidizing atmosphere to ensure oxygen free and Cuprous oxide-free surface.

5. Proper certificates describing composition and results of all tests carried out must be supplied with each consignment. These certificates, along with check results for dimensional and thickness accuracy are recommended to be carried out for every delivered lot, should be maintained till handing over of the project.

6. Tubes should have 360 degree concentric wall thickness along their entire length.

7. Wall thickness for soft tubes (bright annealed mirror finish ) should be 0.8 mm for 1/4", 3/8" & 1/2" tubes, 1.0 mm for 5/8" tubes, 1.2 mm for 3/4" tubes. Wall thickness for hard tubes should be 1 mm for 7/8", 1" and 1.1/8" tubes, 1.1 mm for 1.1/4", 1.2 mm for 1.3/8" and 1.3 mm for 1.5/8" tubes.

8. Wall thickness for elbows and fittings should be minimum 0.2 mm more than corresponding tube / tube size.

9. For 1/4" to sizes up to 3/4", pulley type benders should be used for soft tubes and brazed joints should be avoided as far as possible. Similarly, for half hard tubes of size 3/4" or more, one side expanded tubes must be used and use of couplings should be avoided as far as possible.

#### **A -2 : TUBING DESIGN:**

1. Contractor should study the tender / GFC drawings carefully, and should carry out detailed survey of site, relating the drawings with site, and understand the system design and site limitations.

2. Contractor should also collect final architectural and reflected ceiling plans from client and study the drawings for any mismatches with the HVAC drawings received. 46 Signature of Contractor

3. Contractor should discuss any such mis- matches and any doubts regarding system design with the consultant and get all doubts clarified.
4. Before commencement of tubing work, proper shop drawings must be generated by the contractor, and same should be got approved from the consultant. The drawings must clearly indicate schematic flow diagrams for various circuits, tube sizes, description and quantities for refrigerant joints, indoor and outdoor unit models and room / block / floor names, tube routes, levels for horizontal tubes, details regarding insulation type and thickness and surface treatment for insulation, typical and critical sections and any other details to explain the entire tubing layout to the installer.
5. Tube sizing and routing must be carried out taking into consideration various site constraints and system manufacturer's recommendations.
6. Care should be taken to design tubing as per the manufacturer's recommendation for maximum tubing total length, maximum tubing length after first tapping, vertical height difference between outdoor and indoor units etc. and necessary corrections should be carried out in outdoor unit capacity if required.

**A - 3 : REFRIGERANT TUBING INSTALLATION WORK:**

1. The installer must first study the shop drawings in detail with respect to the site condition and point out any fouling / alternatives to the agency prepare shop drawing sand necessary revisions must be carried out in the drawings, to be approved by consultant.
2. The layout must be marked on the true ceiling and any civil openings required should be marked and got done from concerned agency.
3. Supports as described in BOQ / specifications should be installed, leaving adjustable free length for supports.
4. Before installation, the tubes and tubes must not be removed from their original packing. Proper storage of tubing is a must to maintain the temper of the tubes / tubes. Any abrasion on ends / surface, or any in grace of dirt / dust must be avoided. Proper Polyethylene sheets should be used for covering the tubes and tubes, while wooden pellets and soft expanded Polyethylene / rubber sheets should be used as floor supports.
5. Necessary loops / slopes must be followed as recommended by system manufacturer.
6. Tubes must be cut to required sizes using cutting tools recommended by system manufacturer.
7. Using proper quality of brazing set, Oxygen / Acetylene and Copper brazing rods having minimum 2% Silver content.

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8. During brazing, Nitrogen must be filled in the Copper tubing at a mild positive pressure and must be kept bleeding out continuously, to prevent any oxidation of parent material.

9. After tubing work, each circuit should be pressure tested as per the system manufacturer's recommendation and as per the procedure described in the following paragraphs. A certificate mentioning the test pressure, time of first and final pressure readings, make, model, serial number, range and least count of the gauge used, along with a copy of valid calibration certificate must be maintained, duly signed by the inspecting technician, and client /PMC representative.

10. After pressure testing, insulation must be completed as per the material, make and thickness mentioned in the approved shop drawing. The joints of insulation must be sealed by minimum 50 mm wide Aluminium adhesive tape. Care should be taken to avoid any air gaps between tube / tube and insulation sleeves, and between two insulation sleeve joints.

11. Proper tagging must be carried out to trace the tubing to respective indoor and outdoor circuits.

12. The tubes exposed to sunlight must be covered / cladded / treated to prevent damage from UV radiation and bird pecks / tampering, as mentioned in the BOQ. The cladding should be made out of 26 G Aluminium sheet or G.S.S. sheet. While cladding, care should be taken to avoid penetrating the insulation by screws. Short screws Of metallic straps should be used for securing cladding sheets. Instead of cladding, glass cloth, with two coats of protective resin should be used.

13. While charging refrigerant, manufacturer's recommendations must be strictly followed, and charging must be carried out using proper charging hose, gauge manifold with calibrated gauges and electronic weigh scale. Further leak check using a gas leak detector should be carried out. Charging must be carried out after proper evacuation of the tubing. The quantity of refrigerant to be charged should be calculated by totalizing the liquid tube volume as per the manufacturer's recommendation.

#### **A - 4 : RECOMMENDATIONS FOR PRESSURE TESTING:**

Refrigerant tubes carry refrigerant at pressures different from atmospheric pressure. When pressure inside tubes is more than atmospheric pressure, refrigerant may escape to the atmosphere, causing commercial loss due to loss of refrigerant, inefficient system performance or even system breakdown and contamination of surroundings. When pressure inside the tubes is less than atmospheric pressure, such as in case of suction tubes of some low temperature refrigeration machines, or during pump-down cycle of normal air-conditioning systems, leakages in tubes leads to ingress of air and moisture, causing severe system damage. Therefore, it is a must that the refrigerant tubing is thoroughly tested for leakages. Pressure testing for any tubing must be carried out at a pressure higher than the maximum operating pressure within the system. It is recommended that the pressure

recommended by manufacturer be followed very strictly. Testing at lower pressures may lead to non-detection of some small leakages, while testing at higher pressures may lead to damage to some factory manufactured components within the system. Generally, for R-410 systems a pressure of around 650psig is used. Nitrogen is the most common gas used for carrying out pressure testing. It has numerous advantages, some of which are listed below:

1. Nitrogen is easily available as a commercial gas packed in easy to handle cylinders.
2. Nitrogen, being the most abundant component of the atmosphere, is safe for leaking out without contaminating the atmosphere.
3. Nitrogen is less costly as compared with other gases.
4. Nitrogen is safe for handling and testing.
5. Nitrogen does not readily react with system components Pressure gauge/s used for testing must be calibrated and a calibration certificate with traceability to a Government(National) Physical Laboratory must be documented. The gauge should be capable of measuring pressure at least 10% above the reading to be recorded.

#### **A - 5 : PROCEDURE FOR CARRYING OUT PRESSURE TEST**

- 1) Ensure that the tubing to be tested is properly secured/supported and the openings have been sealed off as per manufacturer's recommendation.
- 2) Install pressure gauge/s at strategic location/s where it shall not be tampered with, at the same time, should be easily visible.
- 3) Install a valve and connecting tubing so that the open end of the tube reaches the cylinder outlet without moving the cylinder.
- 4) Connect the tube to the cylinder and after ensuring proper connection, crack open the cylinder valve, keeping an eye on the pressure gauge. Let the pressure rise to around 10 psig.
- 5) Check for proper sealing of all flanged / flare nut joints or valves/ valve glands looking for noise of escaping Nitrogen and seal same.
- 6) Open the cylinder valve again and raise the pressure to 200 psig.
- 7) Check the tube line for major leakages at brazed joints, elbows, valve glands, equipment end connections and tube seams with the help of soap water. Make up the leaks by tightening nuts. If the leaks are in brazed joints, flush out Nitrogen and carry out necessary re-brazing.
- 8) Open the cylinder valve again and increase the pressure to 150 psig less than the final test pressure. Repeat leak check as above.

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- 9) Open the cylinder valve again and slowly raise the pressure to the manufacturer recommended pressure. Carry out a thorough leak check.
- 10) Record the pressure and time. Let the pressure stand for 24 hours without tampering. Check the pressure again after 24 hours. If pressure has dropped, the tubing should be checked very thoroughly for minor leakages. It is important to follow this 24 hours period as it gives enough time to detect minute leakages, and it removes the doubt created by thermal expansion of Nitrogen ( as after exact 24 hours, ambient conditions are generally same).
- 11) In case of tubing extending to lengths more than 30 m and / or having more than 20 site fabricated joints, the pressure should be recorded after 24 hours as well as after 48 hours, so that all leakages are detected and made up.
- 12) After detecting and making up any leak, the pressure testing must be carried out once again from beginning.

#### **A - 6 : DOCUMENTATION RECOMMENDED FOR ENSURING PROPER QUALITY**

##### **ASSURANCE:**

1. Manufacturer's certificate with every Delivery Challan declaring composition of parent material
2. Signed and approved Shop drawings approved by Architect, prior to start of work
3. Pressure test report signed by Architect/ Client / Equipment manufacturer / PMC / Consultant.
4. False Ceiling closure check list duly signed by Architect / Client / Equipment manufacturer/ PMC /Consultant.

##### **GENERAL:**

#### **ACR GRADE COPPER TUBES AND FITTINGS : SIZES AND SPECIFICATIONS**

##### **Tube material Specification :**

( CFC- free refrigerant compatible tubes produced using Total loss lubricants )

1. De-oxidized High Phosphorized copper (DHP grade) raw material, with Chemical Composition of Copper = 99.9 % ; Phosphorus = 0.015 to 0.040 %
2. RoHS Compliant
3. 360 degree concentric Wall thickness along the entire length of the tubes 50 Signature of Contractor

4. Half hard drawn copper tubes should confirm to ASTM B75/ASTM280 ( C12200 ) / JIS H:3300( C1220 ) / BS2871 part 3 ( C106 ). Use Half Hard Temper Type for tube sizes above 19.1 mm.

5. Soft copper tubes, bright annealed (mirror finish) should confirm to ASTM B68 / JIS H:3300

6. Super clean quality with low residual content below the permissible levels of 0.038 g/m<sup>2</sup> for compatibility with use of CFC-free refrigerant.

7. 100 % Eddy Current Tested Tubes are to be used

8. Proper packaging, Storage and Traceability of the tubes.

Copper tube and Fittings Sizes and Insulation Specifications for CFC-free Refrigerant. S. No.	OUTER DIAMETER IN INCH & (MM)	WALL THICKNESS IN GAUGE & (MM)	LENGTH IN FEET & (MTRS.)	TEMPER	WEIGHT PER METER (kg.)	SOCKET AND ELBOW THICKNESS IN SWG & (MM)	RUBBER INSULATION THICKNESS
1.	1/4" (6.4 mm)	21 ( 0.8 mm)	50' (15.24)	Soft	0.1265	18 (1.2mm)	15mm
2.	3/8" (9.5 mm)	21 ( 0.8 mm)	50' (15.24)	Soft	0.199	18 (1.2mm)	15mm
3.	1/2" (12.7 mm)	21 ( 0.8 mm)	50' (15.24)	Soft	0.2714	18 (1.2mm)	15mm
4.	5/8" (15.9 mm)	19 ( 0.99 mm)	50' (15.24)	Soft	0.4241	18 (1.2mm)	15mm
5.	3/4" (19.1 mm)	19 ( 0.99 mm)	50' (15.24)	Soft	0.5147	18 (1.2mm)	20mm
6.	1/4" (6.4 mm)	21 ( 0.8 mm)	12' (3.658)	Half Hard	0.1265	18 (1.2mm)	15mm
7.	3/8" (9.5 mm)	21 ( 0.8 mm)	12' (3.658)	Half Hard	0.199	18 (1.2mm)	15mm
8.	1/2" (12.7 mm)	21 (0.8 mm)	12' (3.658)	Half Hard	0.2714	18 (1.2mm)	15mm
9.	5/8" (15.9 mm)	19 (0.99 mm)	12' (3.658)	Half Hard	0.4241	18 (1.2mm)	15mm
10.	3/4" (19.1 mm)	21 (0.8 mm)	12' (3.658)	Half Hard	0.4164	18 (1.2mm)	20mm

11.	7/8" (22.2 mm)	21 (0.8 mm)	12' (3.658)	Half Hard	0.489	18 (1.2mm)	20mm
12.	1.0" (25.4 mm)	20 ( 0.88 mm)	12' (3.658)	Half Hard	0.6054	18 (1.2mm)	20mm
13.	1 1/8" (28.6 mm)	19 (0.99 mm)	12' (3.658)	Half Hard	0.7865	18 (1.2mm)	20mm
14.	1 1/4" (31.8 mm)	18.5 (1.1 mm)	12' (3.658)	Half Hard	0.843	16 (1.6mm)	20mm
15.	1 3/8" (34.9 mm)	18 (1.21 mm)	12' (3.658)	Half Hard	1.155	16 (1.6mm)	20mm
16.	1 1/2" (38.1 mm)	17.5 (1.3 mm)	12' (3.658)	Half Hard	1.340	16 (1.6mm)	20mm
17.	1 5/8" (41.3 mm)	17 (1.43 mm)	12' (3.658)	Half Hard	1.594	16 (1.6mm)	20mm

Use Soft tube only for Indoor Unit Connection

**10. INSULATION TO REFRIGERANT PIPING:**

FR nitrile rubber / cross linked closed cell polyethylene tube insulation of 13mm upto 1" dia pipes and 19mm thick for 1" and above shall be used for copper piping both for suction line and liquid line. All joints shall be sealed with self-adhesive tape or with heat.

**11. COMMUNICATION CABLE AND CONTROL CABLING:**

Communication cable and control cabling: Communication cable and control cabling should be of non-polar shielded 2 core cable shall be laid in 20 mm dia PVC conduits of required size. PVC conduit should be clamped neatly maintaining a distance from power cables, Cable terminations and dressing shall be done properly and neatly.

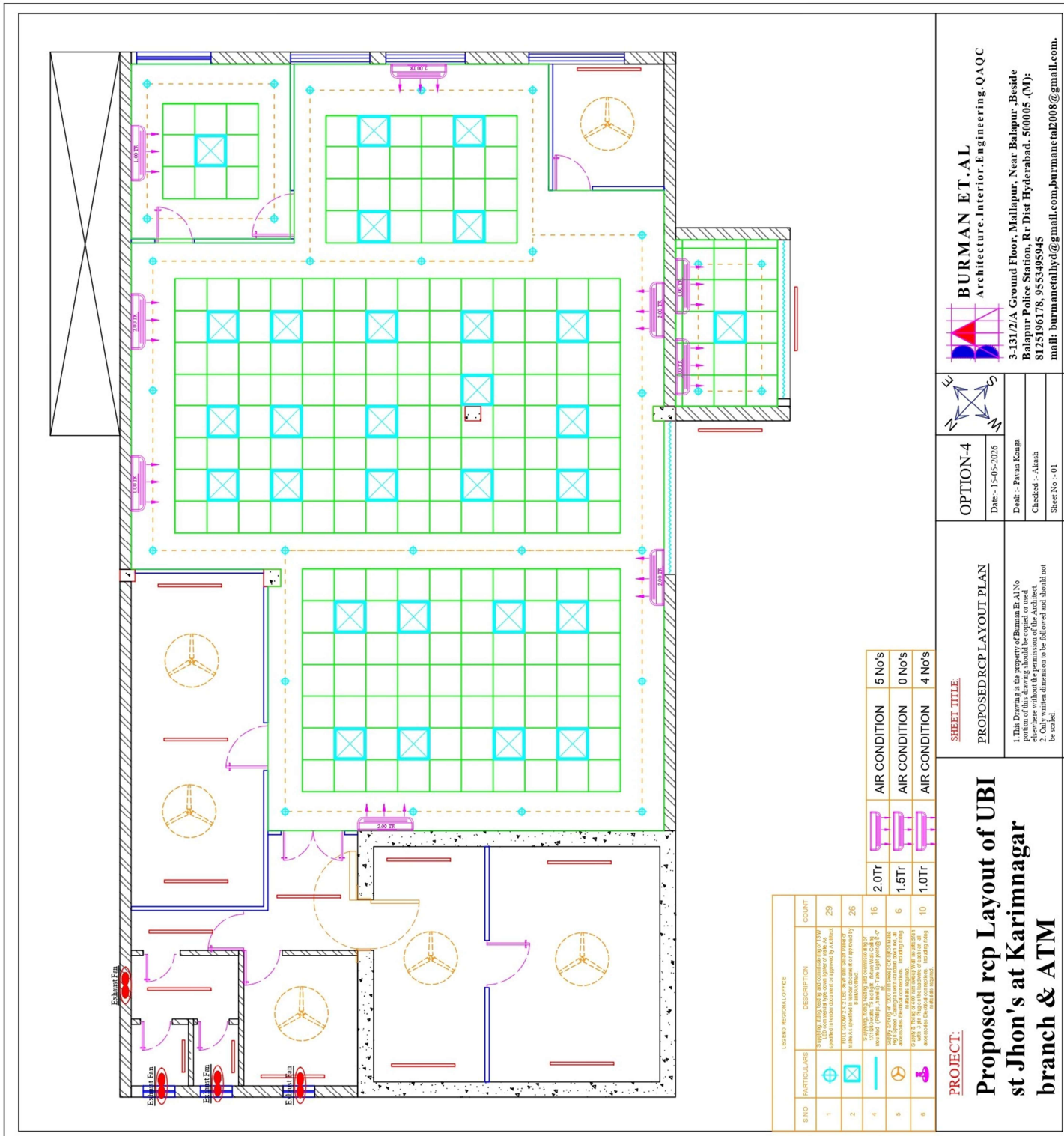
**12. DRAIN PIPING:**

PVC drain piping shall be used for the drain piping. Proper care shall be taken to lay the drain piping with sufficient slope and should be clamped or supported at 1.5 m interval. All drain pipe joints shall be done with adhesive. Drain piping should be tested for leaks before commissioning. After testing for leaks, drain pipe shall be insulated with 9 mm thick nitrile rubber tube insulation. Insulation shall be finished with self-adhesive black cotton tape. 52 Signature of Contractor

**LIST OF APPROVED MANUFACTURERS / NATURAL SOURCES OF MATERIALS TO BE USED IN**

<b>THE AC WORKS SUBJECT TO THE APPROVAL OF SAMPLES BY THE CONSULTANT. S.No.</b>	<b>Material Name.</b>	<b>Brand / Manufacturer / Recommended Make.</b>
1.	CASSETTE AND HI WALL UNITS.	Carrier, Voltas, Daikin Lloyd. Inverter Model
2.	GI Sheets	TATA / HSL / SAIL / NIPPON DENRO or approved equivalent.
3.	Fire Damper	Caryaire / AirMaster / Air Breeze / Ravistar or approved equivalent.
4.	Vibration Isolators / Flexible Connectors	Resistoflex / Dunlop or approved equivalent.
5.	INSULATION / Fibre glass.	UP Twiga / Kimmco / Owens corning or approved equivalent.
6.	Power Cables	CCI / ICC / Gloster / UCL or approved equivalent.
7.	Cables	Finolex / RR cables / polycab / finecab
8.	Aluminum Grilles Diffusers / Linear Grilles	Caryaire / Air Master / Air Breeze / SRIFABS or approved equivalent.
9.	Filters	Klenzoids / Airtech / Aerosol / Anfilco or approved equivalent.
10.	Cooling Coils / Heating Coils	Daikin / Lloyd / Rohini / Ethos / Carrier / Jaypee / Coil Company / ZECO or approved equivalent.
11.	Nitrile rubber	Armaflex / k flex

**NOTE : The contractor shall use only above mentioned material or equivalent make to be approved by the Consultant. All other materials shall conform to the specifications laid down. The tenderer shall take this into account while tendering rates / prices. However the samples of every material including all fixing accessories shall be got approved by BANK / Consultant before Execution.**



**PROJECT:**

## Proposed rcp Layout of UBI st Jhon's at Karimnagar branch & ATM

**SHEET TITLE:**

**PROPOSED RCP LAYOUT PLAN**

**OPTION-4**

Date: -15-05-2026

Drawn: - Pravin Kange

Checked: - Akash

Sheet No: - 01

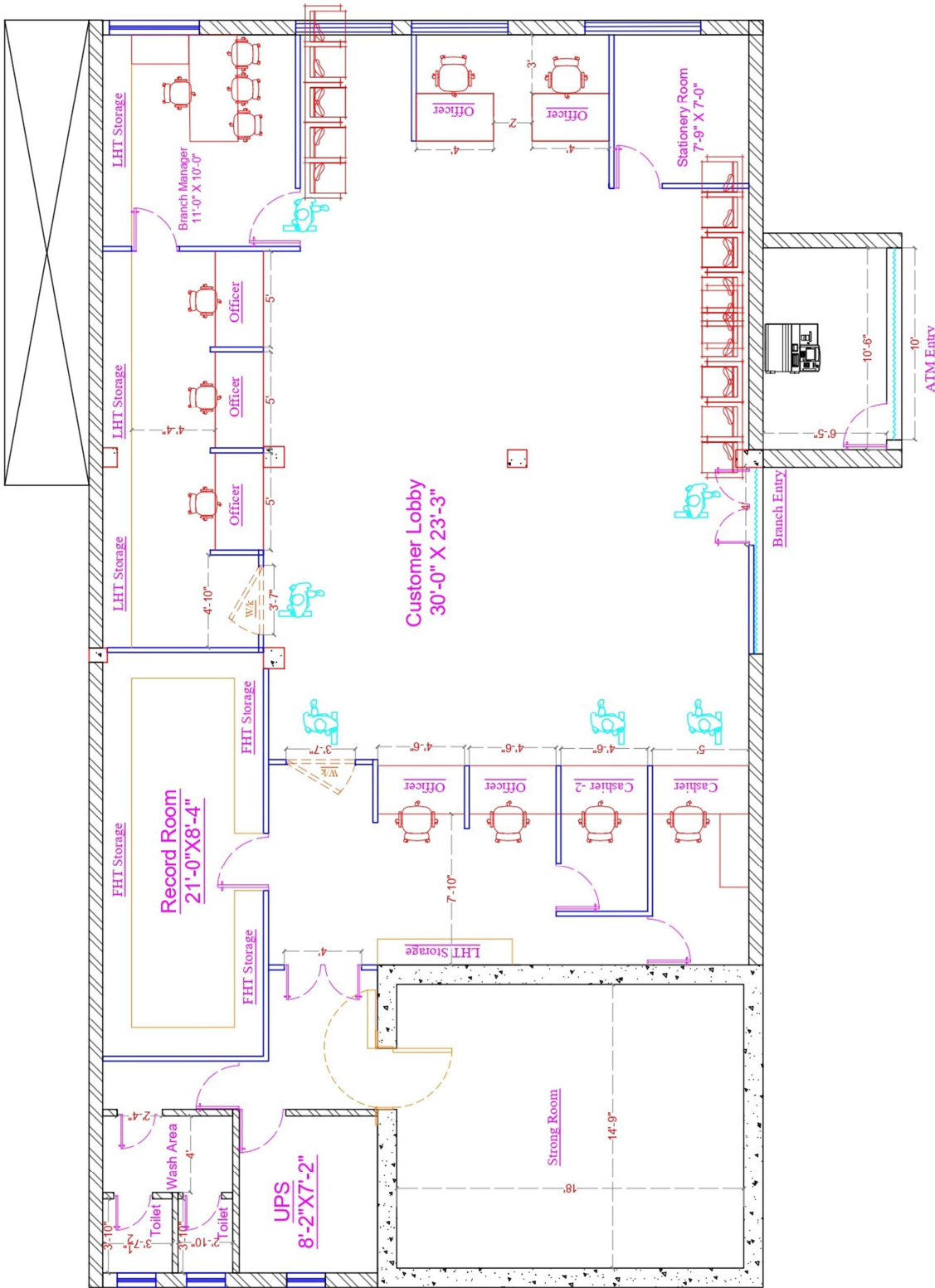
**BURMAN E.T.A.L**

Architecture, Interior, Engineering, QA/QC

3-131/2/A Ground Floor, Mallapur, Near Balapur, Beside  
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**PROJECT:**  
**Existing Layout of UBI st Jhon's at Karimnagar branch & ATM**

**SHEET TITLE:**  
**EXISTING LAYOUT PLAN**

**OPTION-4**  
 Date: 12-05-2026  
 Draft: - ASAD  
 Checked: - Akash  
 Sheet No: - 01

**BURMAN ET.AL**  
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 Only written dimension to be followed and should not be read.

**PROJECT: UNION BANK AT INDIA ST.JHON'S BRANCH AT  
KARIMNAGAR-KARIMNAGAR REGION**

**SUMMARY**

**ARCHITECT :- BURMAN ET.AL.**

<b>S.NO.</b>	<b>ITEMS</b>	<b>AMOUNT</b>
1	AIR CONDITIONING WORKS	
<b>TOTAL AMOUNT</b>		
<b>DISCOUNT</b>		
<b>TOTAL AMOUNT AFTER DISCOUNT</b>		
<b>GST</b>		