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**Name of Work: - ARMO E&M services at DDB Tower-A, Mandi House, New Delhi. (SH: Providing 4way cassette type indoor units at 5th floor).**

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**Certified that N.I.T. contain page 01 to 38.**

This NIT is approved for **Rs. 20,18,747/- [Rupees Twenty Lac Eighteen Thousand Seven Hundred Forty Seven Only]** Vide N.I.T. No. **NIT/SE[E]/NZ/2026-27/08** , Dated: **06.10.2026**

**Executive Engineer [E] P**

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### **NOTICE INVITING e – TENDER**

The Executive Engineer [E] Project, CCW, AIR, Room no. 501-B, 5<sup>th</sup> Floor, Soochna Bhawan, CGO Complex, Lodhi Road, New Delhi on behalf of President of India invites e-tender in **two bid system** [Step-I: Pre-qualification of agencies & Step-II: Financial bid] from OEM or their authorized service dealer of **Daikin make** of VRV/VRF Air conditioning system provided they meet the eligibility criteria, for the following work :-

NIT No.: **NIT/SE[E]/NZ/2026-27/08** , Dated: **06.10.2026**

Name of Work: **ARMO E&M services at DDB Tower-A, Mandi House, New Delhi. (SH: Providing 4way cassette type indoor units at 5th floor).**

Estimated cost: **Rs.20,18,747/-**

Earnest Money Deposit:- **Rs.40,375/-**

Period of completion: - **02 Months**

Last date & time of submission of bid: **Up to 03:00 P.M. on Date 14.10.2026**

- Tender bid form and other details can be obtained from the website [www.prasarbharati.eproc.in](http://www.prasarbharati.eproc.in)
- New bidder may contact [parasarbharatisupport@c1india.com](mailto:parasarbharatisupport@c1india.com) for any support or registration with web portal [www.prasarbharati.eproc.in](http://www.prasarbharati.eproc.in) , or contact their help line No. given on portal on any working days between 6.00 Hrs to 18.00 Hrs.
- The bid can only be submitted after uploading of **Receipt of deposition of original EMD** drawn in favour of **PB BCI EE [E]-II CCW, AIR, New Delhi to the [www.prasarbharati.eproc.in](http://www.prasarbharati.eproc.in)** upto the specified bid submission date and time.
- The bid can only be submitted after deposition of original EMD, which should be deposited either in the office of **Executive Engineer** inviting bids or division office of any Executive Engineer, CCW AIR within the period of bid submission. The EMD receiving Executive Engineer(E)Project shall issue a receipt of deposition of earnest money deposit to the bidder in a prescribed format uploaded by tender inviting EE in the NIT.

Executive Engineer [E] P  
Email-eeekwcamp@gmail.com

|                                                                 |
|-----------------------------------------------------------------|
| <b>PRASAR BHARATI</b>                                           |
| <b>ALL INDIA RADIO: CIVIL CONSTRUCTION WING</b>                 |
| <b>INFORMATION AND INSTRUCTIONS FOR BIDDERS FOR e-TENDERING</b> |
| <b>FORMING PART OF NIT AND TO BE POSTED ON WEBSITE</b>          |

The Executive Engineer [E] Project, CCW, AIR, Room no. 501-B, 5<sup>th</sup> Floor, Soochna Bhawan, CGO Complex, Lodhi Road, New Delhi on behalf of President of India invites e-tender in **two bid system** [Step-I: Pre-qualification of agencies & Step-II: Financial bid] from OEM or their authorized service dealer of **Daikin make** of VRV/VRF Air conditioning system provided they meet the eligibility criteria, for the following work:-

| Serial Number | NIT No.                        | Name of Work                                                                                                                       | Estimated Cost        | EMD                | Time for Completion | Last date & time for submission of e-tender | Time & date of opening of PQ Bid | Time & date of opening of Financial Bid                                        |
|---------------|--------------------------------|------------------------------------------------------------------------------------------------------------------------------------|-----------------------|--------------------|---------------------|---------------------------------------------|----------------------------------|--------------------------------------------------------------------------------|
| 1             | <b>NIT/SE[E]/NZ/2026-27/08</b> | <b>ARMO E&amp;M services at DDB Tower-A, Mandi House, New Delhi. (SH: Providing 4way cassette type indoor units at 6th floor).</b> | <b>Rs.20,18,747/-</b> | <b>Rs.40,375/-</b> | <b>02 Months</b>    | <b>Upto 3.00 P.M. on 14.10.2026</b>         | <b>At 3.30 P.M On 14.10.2026</b> | <b>To be intimated separately to the prequalified agencies on a later date</b> |

Contractors who fulfill the following requirements shall be eligible to apply. Joint ventures are not accepted.

**Eligibility Criteria:** Eligibility Criteria and Terms & Conditions for prequalification of prospective firms / agencies shall be as under:-

The firms/ agencies should upload definite proof [along with self-attested documents with application] from the appropriate authority of having satisfactorily completed similar works in last 7 years ending previous day of last date of submission of bids as specified below:

“**Three** similar completed works of aggregate cost not less than **40 %** of estimated cost of above work or **Two** similar completed works of aggregate cost not less than **60 %** of estimated cost of above work or **one** similar completed work of aggregate cost not less than **80 %** of the estimated cost of above work in Central or State Government/ Central or State Government Undertaking/ Central or State Government Autonomous Body, otherwise TDS certificates is required against the eligible work (For works executed in private sector).”

The value of executed works shall be brought to current costing level by enhancing the actual value of work at simple rate of 7 % per annum, calculated from the date of completion to the last date of receipt of application for tenders.

Definition of Similar Work:- **“SITC/Replacement of VRF type air conditioning system.**

1. The firms who wish to tender for the work may submit their application **on 14.10.2026 or before By 3:00 P.M.** through e-tendering process and the same shall be opened **at 3:30 P.M. on 14.10.2026** in the presence of representative of the firms who would like to present.
2. The intending bidder must read the terms and conditions of CPWD-6 carefully. He should only submit his bid if he considers himself eligible and he is in possession of all the documents as required.
3. The bid document consisting of specifications, the schedule of quantities of various types of items to be executed and the set of terms and conditions of the contract to be complied with and other necessary documents can be seen and downloaded from website [www.prasarbharati.eproc.in](http://www.prasarbharati.eproc.in) free of cost or can be seen from o/o the EE(E)-Project CCW AIR
4. Those firms/ agencies not registered on the website mentioned above are required to get registered with [www.tenderwizard.com/AIR](http://www.tenderwizard.com/AIR). If needed they can be imparted training on online bidding process as per details available on the website.
5. If any information furnished by the applicant is found incorrect at a later stage, he will be debarred from tendering / taking up the work. The department reserves the right to verify the particulars furnished by the applicants independently.
6. The intending bidder must have valid class-III digital signature to submit the bid.
7. **The bid can only be submitted after depositing** of original EMD, which should be deposited either in the office of Executive Engineer inviting bids or division office of any Executive Engineer, CCW AIR within the period of bid submission. The EMD receiving Executive Engineer (including NIT issuing EE/AE) shall issue a receipt of deposition of earnest money deposit to the bidder in a prescribed format (enclosed) uploaded by tender inviting EE in the NIT. The Bid can only be submitted after uploading the mandatory scanned documents such as Demand Draft or Pay order or Banker's Cheque or Deposit at call Receipt or Fixed Deposit Receipts and Bank Guarantee of any Scheduled Bank towards cost of bid document and EMD in favour of respective in favour of **PB BCI EE [E]-II CCW, AIR, New Delhi** and processing Fee in favour of **C1 India Pvt. Limited** and other documents as specified.

Unless all intending tenderer/bidders who have uploaded/submitted their bids by the last date of tender have submitted their original hard copy of EMDs which is verified from the issuing bank, tenders cannot be accepted and to be treated as invalid tender.

8. The Bid document consisting of plans, specifications, the Schedule of quantities of various types of items to be executed and the set of terms and conditions of the contract to be complied with and other necessary documents can be seen from website [www.tenderwizard.com/AIR](http://www.tenderwizard.com/AIR),
9. Those bidders not registered on the website mentioned above, are required to get registered beforehand. If needed they can be imparted training on online bidding process as per details available on the website.
7. On opening date, the contractor can login and see the bid opening process. After opening of bids he will receive the competitor bid sheets.
8. Bidder can upload documents in the form of JPG format and PDF format.
9. Bidder must ensure to quote rate of each item. The column meant for quoting rate in figures appears in pink colour and the moment rate is entered, it turns sky blue.

In addition to this, while selecting any of the cells a warning appears that if any cell is left blank the same shall be treated as "0". Therefore, if any cell is left blank and no rate is quoted by the bidder, rate of such item shall be treated as "0" (ZERO).

However, If a tenderer quotes nil rates against each item in item rate tender or does not quote any percentage above/below on the total amount of the tender or any section / sub head in percentage rate tender, the tender shall be treated as invalid and will not be considered as lowest tenderer.

- 10 The price bid shall be opened after verifying the documents. However, bidders shall have no option to submit the revised price bid, if so, desired by them. The price bid submitted earlier shall remain valid and opened on due date.
- 11 The department reserves the right, without being liable for any damages or obligation to inform the bidder, to:
  - (a) Amend the scope and value of contract.
  - (b) Reject any or all the applications without assigning any reason.
  - (c) And to restrict the list of qualified contractors to any number deemed suitable by it, if to many bids are received satisfying the laid down criteria.

Any effort on the part of the bidder or his agent to exercise influence or to pressurize the department would result in rejection of his bid. Canvassing of any kind is prohibited.

- 12 Any information furnished by the bidder found to be incorrect either immediately or at a later date, would render him liable to be debarred from tendering / taking up of work in CPWD. If such bidder happens to be enlisted contractor of any class in CPWD, his name shall also be removed from the approved list of contractors.

**List of Documents to be scanned and uploaded within the period of bid submission:-**

- i. Completion certificate of work experience of similar nature in Para 1.2 of Form CPWD-6. The agency should have experience of having successfully completed **(similar works)** in Central Government, State Government, PSUs and other Government local bodies, otherwise TDS certificates is required against the eligible work during last seven years ending last day of the month previous to the one in which application are invited. **(To avoid delays in getting the completion cost verification from the project authorities, TDS certificates including BOQ of final bill is desired, but not essential for tendering purposes. Full credentials of the project authorities e.g. email, ID, complete postal address, Phone no. etc. are required for verification purpose).**
- ii. Demand Draft/Pay order or Banker's Cheque /Deposit at Call Receipt/FDR/ Bank Guarantee of any Scheduled Bank against EMD.
- iii. Copy of receipt for deposition of original EMD to any division office of CCW AIR
- iv. Affidavit as per clause 1.2.2 of CPWD-6 on non-judicial stamp paper of Rs. 100/- duly notarized.
- v. Certificate of authorized service dealer from OEM Daikin make if service dealer participated.
- vi. Certificate of GST Registration in any State and
- vii. Acknowledgement of last return filed [No later than one year back from the last date of receipt of tender]

If the bidder has not obtained GST registration as applicable then he shall scan and upload the following undertaking alongwith other bid documents.

**"If work is awarded to me, I/We shall obtain GST registration certificate as applicable within one month from the date of receipt of award letter or before release of any payment by CCW, whichever is earlier, failing which I/We shall be responsible for any delay in payments which will be due towards me/us on a/c of the work executed and/or for any action taken by CCW or GST department in this regard".**

**Executive Engineer [E] P**

**20A.14 Information and instruction for Executive Engineer for e-tendering:**

1. The Executive Engineer of all divisions of CCW AIR should receive the original EMD for tender of other division.
2. The NIT approving authority/EE at the time of issue of NIT shall also fill and upload the following prescribed format of receipt of deposition of original EMD along with NIT:-
3. The Executive Engineer receiving original EMD shall also intimate tender inviting Executive Engineer about deposition of EMD by the agency by email/fax/telephonically.
4. The original EMD receiving Executive Engineer shall release the EMD after Verification from the e-tendering portal website (www.tenderwizard.com>tender free view> advance search>awarded tenders) that the particular contractor is not L-1 tenderer and work is awarded.
5. The tender inviting Executive Engineer will call for original EMD of the L-1 tenderer from EMD receiving Executive Engineer immediately.
6. The Executive Engineer receiving EMD in original form shall examine the EMD deposited by the bidder and shall issue a receipt of deposition of earnest money to the agency in a given format uploaded by tender inviting EE. The receipt may be issued by the EE/AAO

|                                                                                                                                                                                                                                                                                                                                                                                                                           |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>Receipt of deposition of original EMD</p> <p>(Receipt No. ....../date .....)</p>                                                                                                                                                                                                                                                                                                                                       |
| <p><b>Name of Work: :- ARMO E&amp;M services at DDB Tower-A, Mandi House, New Delhi. (SH: Providing 4way cassette type indoor units at 5th floor).</b></p> <p><b>2. NIT No.: NIT/SE[E]/NZ/2026-27/08 , Dated: 06.10.2026</b></p> <p><b>3. Estimated Cost: Rs.20,18,747/-</b></p> <p><b>4. Amount of Earnest Money Deposit: Rs.40,375/-</b></p> <p><b>5. Last date of submission of bid 14.10.2026 upto 15:00 hrs.</b></p> |
| <p>1. Name of contractor .....#</p> <p>2. Form of EMD.....#</p> <p>3. Amount of Earnest Money Deposit.....#</p> <p>4. Date of submission of EMD.....#</p> <div style="text-align: right; margin-top: 20px;"> <p>Signature, Name and Designation of EMD<br/>receiving officer (EE/AAO)<br/>alongwith Office stamp</p> </div> <p>(# To be filled by EMD receiving EE)</p>                                                   |

**CPWD-6 FOR e-TENDERING**

The Executive Engineer [E] Project, CCW, AIR, Room no. 501-B, 5th Floor, Soochna Bhawan, CGO Complex, Lodhi Road, New Delhi on behalf of President of India invites e-tender in two bid system [Step-I: Pre-qualification of agencies & Step-II: Financial bid] from OEM or their authorized service dealer of Daikin make of VRV/VRF Air conditioning system provided they meet the eligibility criteria, for the following work:-**“ARMO E&M services at DDB Tower-A, Mandi House, New Delhi. (SH: Providing 4way cassette type indoor units at 5th floor).**

The enlistment of the contractors should be valid on the last date of submission of e-tenders. In case the last date of submission of tender is extended, the enlistment of the contractor should be valid on the original date of submission of e-tenders.

**1.1** The work is estimated to cost of **Rs.20,18,747/-** This estimate, however, is given merely as rough guide.

**1.1.1** The authority competent to approve NIT for the combined cost and belonging to the major discipline will consolidate NITs for calling the bids. He will also nominate Division which will deal with all matters relating to the invitation of bids.

For composite bid, besides indicating the combined estimated cost put to bid, should clearly indicate the estimated cost of each component separately. The eligibility of bidders will correspond to the combined estimated cost of different components put to bid.

**1.2** Intending bidder is eligible to submit the bid provided he has definite proof from the appropriate authority i.e. not below the rank of Executive Engineer, which shall be to the satisfaction of the competent authority, of having satisfactory completed similar works (Similar works) in the last seven years ending in Central Government, State Government, PSUs and other Government Local bodies, otherwise TDS certificates is required against the eligible works (For works executed in private sector):-

**Criteria of eligibility for online submission of tender documents:-**

**1.2.1 Conditions for Non-CPWD registered contractors only, if bids are also open to non-CPWD contractors.**

For works estimated cost upto tendering limit of class -1 composite category Contractor (However, for Horticulture and Furniture etc. discipline, it may be modified as per bidding limit of CPWD class I contractors of respective discipline as the case may be)

Three similar works each of value not less than **Rs. 8,07,499/-** or two similar work each of value not less than **Rs. 12,11,248/-** or one similar work of value not less than **Rs. 16,14,998/-** (all figures rounded to nearest convenient figure) in last 7 years ending previous day of last date of submission of bids.

**Note:-**

For works costing above tendering limit of class –II composite category contractors but upto tendering limit of Clause-I composite category Contractor ( However, for Horticulture and Furniture discipline, it may be modified as per bidding limit of CPWD class II and CPWD Class I contractors respectively of respective discipline as the case may be) when bids are open to non-CPWD contractors also, then class II contractors of CPWD registered shall also be eligible if they satisfy the eligibility criteria specified in 1.2.1 above.

**1.2.2 Criteria of eligibility for CPWD as well as non-CPWD contractors,**

For works estimated to cost above the tendering limit of class -1 composite category Contractor (However for Horticulture and Furniture discipline, it may be modified as per bidding limit of CPWD class I contractors of respective discipline as the case may be.)

Three similar works each of value not less than Rs. ....40% .....or two similar work each of value not less than Rs.....80%.....or one similar work of value not less than Rs.....60% .....(all figures rounded to nearest convenient figure ) in last 7 years ending previous day of last date of submission of bids.

The value of executed works shall be brought to current costing level by enhancing the actual value of work at simple rate of 7% per annum, calculated from the date of completion to the last date of submission of bid. This is applicable for 1.2.1 as well as 1.2.2 (This is not applicable for CPWD enlisted contractors of appropriate class in composite category)

**To become eligible for issue of bid, the bidders shall have to furnish an affidavit as under:-**

**I/We undertake and confirm that eligible similar works(s) has/have not been got executed through another contractor on back to back basis. Further that, if such a violation comes to the notice of Department, then I/we shall be debarred for bidding in CPWD in future forever. Also, if such a violation comes to the notice of Department before date of start of work, the Engineer-in-Charge shall be free to forfeit the entire amount of Earnest Money Deposit/ Performance Guarantee. (Scanned copy to be uploaded at the time of submission of bid)**

**1.2.3** When bids are invited from non CPWD contractors and CPWD class II contractors as per provisions of clause 1.2.1 above, it will be mandatory for non CPWD contractors and CPWD class-II contractors to upload the work experience certificate(s) and the affidavit as per the provisions of clause 1.2.2.

~~But for such bids, Class-I contractors of CPWD are eligible to submit the bids without submission of work experience certificate and affidavit. Therefore, CPWD class-I contractors shall upload two separate letters for experience certificate and affidavit that these documents are not required to be submitted by them. Uploading of these two letters is mandatory otherwise system will not clear mandatory fields.~~

**2.** Agreement shall be drawn with the successful tenderer on prescribed Form No. CPWD 7/8 [or other Standard Form as mentioned] which is available as a Government of India

Publication. Tenderer shall quote his rates as per various terms and conditions of the said form which will form part of the agreement.

3. The time allowed for carrying out the work will be **02 Months** from the date of start as defined in schedule 'F' or from the first date of handing over of the site, whichever is later, in accordance with the phasing, if any, indicated in the tender documents.

4. The site for the work is available.

Or

The architectural and structural drawings shall be made available in phased manner, as per requirement of the same as per approved program of completion submitted by the contractor after award of work.

5. The tender document consisting of plans, specifications, the schedule of quantities of various types of items to be executed and the set of terms and conditions of the contract to be complied with and other necessary documents except Standard General Conditions of Contract Form can be seen from website [www.prasarbharati.eproc.in](http://www.prasarbharati.eproc.in) free of cost.
6. After submission of the bid the contractor can re-submit revised bid any number of times but before last time and date of submission of tender as notified.
7. While submitting the revised bid, contractor can revise the rate of one or more item(s) any number of times (he need not re-enter rate of all the items) but before last time and date of submission of tender as notified.
8. Earnest Money can be paid in the form of Treasury Challan or Demand Draft or Pay order or Banker's Cheque or Deposit at Call Receipt or Fixed Deposit Receipt [drawn in favour of **PB BCI EE [E]-II CCW, AIR, New Delhi** shall be scanned and uploaded to the e-Tendering website within the period of bid submission. The original EMD should be deposited either in the office of Executive Engineer inviting bids or division office of any Executive Engineer, CCW AIR within the period of bid submission. The EMD receiving Executive Engineer (including NIT issuing EE/AE) shall issue a receipt of deposition of earnest money deposit to the bidder in a prescribed format (enclosed) uploaded by tender inviting EE in the NIT.

A part of earnest money is acceptable in the form of Bank Guarantee also. In such case, 50% of earnest money or Rs. 20 lac, whichever is less, will have to be deposited in shape prescribed above, and balance in shape of Bank Guarantee of any Scheduled Bank having validity for six months or more from the last date of submission of bid which is to be scanned and uploaded by the intending bidders.

Copy of Enlistment Order and certificate of work experience and other documents as specified in the press notice shall be scanned and uploaded to the e-Tendering website within the period of bid submission. However, certified copy of all the scanned and uploaded documents as specified in press notice shall have to be submitted by the lowest bidder only along with physical EMD of the scanned copy of EMD uploaded within a week

physically in the office of tender opening authority. Online bid documents submitted by intending bidders shall be opened only of those bidders, whose original EMD deposited with any division of CCW AIR and other documents scanned and uploaded are found in order.

The bid submitted shall be opened at 03:30 PM on **14.10.2026**

➤ **E-Tender Processing Fee [Nonrefundable]** as admissible shall be payable to **M/s C1 India Pvt Ltd** through their e-gateway by credit card/ debit card, internet banking or RGTS/ NEFT facility.

➤ **Earnest Money - Rs.40,375/-** in the form of Demand Draft or Pay order or Bankers Cheque or Deposit at Call Receipt or Fixed Deposit Receipt [drawn in favour of **PB BCI EE [E]-II CCW, AIR, New Delhi** or Bank Guarantee of any scheduled Bank

Online tender documents submitted by the intending tenderers shall be opened only of those tenderers, who has deposited e-Tender Processing Fee with **M/s C1 India Pvt Ltd** and EMD and other documents scanned & uploaded are found in order and agencies are approved by the competent authority.

**9. The bid submitted shall become invalid and e-tender processing fee shall not be refunded if:**

- i. The bidder is found ineligible.
- ii. The bidder does not deposit original EMD with division office of any Executive Engineer, CCW AIR (The EMD document shall only be issued from the place in which the office of receiving division office is situated).
- iii. The bidder does not upload all the documents [including copies of registration for GST as stipulated in the bid document including the copy of receipt for deposition of original EMD instrument.
- iv. If any discrepancy is noticed between the documents as uploaded at the time of submission of bid and hard copies as submitted physically by the lowest tenderers in the office of bid opening authority.
- v. If a tenderer quotes nil rates against each item in item rate tender or does not quote any percentage above/below on the total amount of the tender or any section / sub head in percentage rate tender, the tender shall be treated as invalid and will not be considered lowest tenderer.

**10. The contractor whose tender is accepted, will be required to furnish performance guarantee of **5% (Five Percent)** of the tendered amount within the period specified in Schedule F. This guarantee shall be in the form of cash (in case guarantee amount is less than Rs. 10000/-) or Deposit at Call receipt of any scheduled bank/Banker's Cheque of any scheduled bank/Demand Draft of any scheduled bank/Pay order of any Scheduled Bank of any scheduled bank (in case guarantee amount is less than Rs. 1,00,000/-) or Government Securities or Fixed Deposit Receipts or Guarantee Bonds of any Scheduled Bank or the State Bank of India in accordance with the prescribed form. In case the contractor fails to deposit the said performance guarantee within the period as indicated in Schedule 'F'. including the extended period if any, the Earnest Money deposited by the contractor shall be forfeited automatically without any notice to the contractor.**

**The Earnest Money Deposited along with tender shall be returned after receiving Performance Guarantee.**

The contractor whose bid is accepted will also be required to furnish either copy of applicable licenses/ registrations or proof of applying for obtaining labour licenses, registration with EPFO, ESIC and BOCW Welfare Board including Provident Fund Code No. If applicable and also ensure the compliance of aforesaid provisions by the sub-contractors, if any engaged by the contractor for the said work within the period specified in Schedule F

**11. The description of the work is as follows :-**

**Name of work:- ARMO E&M services at DDB Tower-A, Mandi House, New Delhi. (SH: Providing 4way cassette type indoor units at 5th floor)**

Intending Tenderers are advised to inspect and examine the site and its surroundings and satisfy themselves before submitting their tenders as to the nature of the ground and sub-soil (so far as is practicable), the form and nature of the site, the means of access to the site, the accommodation they may require and in general shall themselves obtain all necessary information as to risks, contingencies and other circumstances which may influence or affect their tender. A tenderers shall be deemed to have full knowledge of the site whether he inspects it or not and no extra charge consequent on any misunderstanding or otherwise shall be allowed. The tenderers shall be responsible for arranging and maintaining at his own cost all materials, tools & plants, water, electricity access, facilities for workers and all other services required for executing the work unless otherwise specifically provided for in the contract documents. Submission of a tender by tenderers implies that he has read this notice and all other contract documents and has made himself aware of the scope and specifications of the work to be done and of conditions and rates at which stores, tools and plant, etc. will be issued to him by the Government and local conditions and other factors having a bearing on the execution of the work.

12. The competent authority on behalf of the President of India does not bind itself to accept the lowest or any other tender and reserves to itself the authority to reject any or all the tenders received without the assignment of any reason. All tenders in which any of the prescribed condition is not fulfilled or any condition including that of conditional rebate is put forth by the tenderers shall be summarily rejected.
13. Canvassing whether directly or indirectly, in connection with tenderers is strictly prohibited and the tenders submitted by the contractors who resort to canvassing will be liable to rejection.
14. The competent authority on behalf of President of India reserves to himself the right of accepting the whole or any part of the tender and the tenderers shall be bound to perform the same at the rate quoted.
15. The contractor shall not be permitted to tender for works in the **AIR, CCW Circle** (responsible for award and execution of contracts) in which his near relative is posted as Divisional Accountant or as an officer in any capacity between the grades of Superintending Engineer and Junior Engineer (both inclusive). He shall also intimate the names of persons who are working with him in any capacity or are subsequently

employed by him and who are near relatives to any gazetted officer in the **All India Radio, Civil Construction Wing or in the Ministry of Information and Broadcasting**. Any breach of this condition by the contractor would render him liable to be debarred from tendering in this department.

16. No Engineer of Gazetted rank or other Gazetted Officer employed in Engineering or Administrative duties in an Engineering Department of the Government of India is allowed to work as a contractor for a period of one year after his retirement from Government service, without the previous permission of the Government of India in writing. This contract is liable to be cancelled if either the contractor or any of his employees is found any time to be such a person who had not obtained the permission of the Government of India as aforesaid before submission of the tender or engagement in the contractor's service.
17. The tender for the works shall remain open for acceptance for a period of **Seventy Five (75)** days from the date of opening of tenders ~~/ Ninety days from the date of opening of financial bid in case tenders are~~ conditions of the tender which are not acceptable to the department, then the Government shall, without prejudice to any other right or remedy, be at liberty to forfeit 50% of the said earnest money as aforesaid. Further the tenderers shall not be allowed to participate in the retendering process of the work.
18. This notice inviting Tender shall form a part of the contract document. The successful tenderers / contractor, on acceptance of his tender by the Accepting Authority shall within 02 Months from the stipulated date of start of the work, sign the contract consisting of:-
  - a) The Notice Inviting Tender, all the documents including additional conditions, specifications and drawings, if any, forming part of the tender as uploaded at the time of invitation of tender and the rates quoted online at the time of submission of bid and acceptance thereof together with any correspondence leading thereto.
  - b) Standard **C.P.W.D. Form 7/8** or other Standard C.P.W.D. Form as mentioned.
- 19 In case any discrepancy is noticed between documents as uploaded at the time of submission of the bid online and hard copies as submitted physically in the office of Executive Engineer, then the bid submitted shall become invalid and the Government shall, without prejudice to any other right or remedy, be at liberty to suspend the firm for one year for tendering process and shall not be eligible to bid for CCW, AIR tenders from date of issue of suspension order.
20. The officer inviting tenders shall have the right of rejecting all or any of the tenderer and will not be bound to accept the lowest or any other tender

**Executive Engineer [E] P**

CPWD FORM - 8

**PRASAR BHARATI**  
**ALL INDIA RADIO: CIVIL CONSTRUCTION WING**

STATE : Delhi  
 BRANCH : CCW, AIR  
 ZONE : North

CIRCLE : SE [E], New Delhi  
 DIVISION : Project [E], New Delhi.  
 SUB-DIV. : MH-II, New Delhi.

**ITEM RATE TENDER & CONTRACT FOR WORKS**

**Tender for the work of:- ARMO E&M services at DDB Tower-A, Mandi House, New Delhi.  
 (SH: Providing 4way cassette type indoor units at 5th floor).**

- ❖ To be submitted online up to **3.00 PM On 14.10.2026**
- ❖ To be opened in presence of tenderers who may be present at **3.30 PM On 06.10.2026** in the office of **Executive Engineer[E]-Project, CCW, AIR, 5th. Floor, Soचना Bhawan, CGO Complex, New Delhi.**

**NIT No. NIT/SE[E]/NZ/2026-27/08 , Dated: 06.10.2026**

i) Issued to:- .....

Signature of officer issuing the documents.....

Designation: - **Executive Engineer [E]-Project,  
 CCW, AIR, 5<sup>th</sup> Floor, Soचना Bhawan,  
 CGO Complex, New Delhi.**

ii) Date of issue: - .....

**T E N D E R**

I/We have read and examined the Notice Inviting Tender, Schedule A, B, C, D, E & F, Specifications applicable, Drawings & Designs, General Rules and Directions, Conditions of Contract, Clauses of Contract, Special Conditions, Schedule of Rate and other documents and Rules referred to in the conditions of contract and all other contents in the tender document for the work.

I/We hereby tender for the execution of the work specified for the President of India within the time specified in Schedule 'F', viz. Schedule of Quantities and in accordance in all respects with the Specifications, Designs, Drawings and instructions in writing referred to in Rule-1 of General Rules and Directions and in Clause 11 of the Conditions of Contract and with such materials as are provided for, by and in respects in accordance with, such conditions so far as applicable.

We agree to keep the tender open for **(75) Seventy Five** days from the date of opening of tender and not to make any modifications in its terms and conditions.

A sum of **Rs.40,375/-** is hereby forwarded in Cash / Receipt Treasury Challan / Deposit at Call Receipt of a Scheduled Bank/ FDR of a Scheduled Bank / Demand Draft of a Scheduled Bank / Bank guarantee issued by a schedule bank as earnest money.

If I/we, fail to furnish the prescribed Performance Guarantee within prescribed period. Further, if I/we fail to commence the work as specified, I/we agree that President of India or his successors in office shall, without prejudice to any other right or remedy available in law, be at liberty to forfeit the said earnest money and the Performance Guarantee absolutely, otherwise the said earnest money shall be retained by him towards security deposit to execute all the works referred to in the tender documents upon the terms and conditions contained or referred to therein and to carry out such deviations as may be ordered, upto maximum of the percentage mentioned in Schedule 'F' and those in excess of that limit at the rates to be determined in accordance with the provision contained in Clause **12.2 & 12.3** of the tender form.

Further, I/We agree that in case of forfeiture of earnest money or both Earnest Money & Performance Guarantee as aforesaid, I/We shall be debarred for participation in the re-tendering process of the work.

I/We undertake and confirm that eligible similar works(s) has/have not been got executed through another contractor on back to back basis. Further that, if such a violation comes to the notice of Department, then I/we shall be debarred for tendering in C.C.W., A.I.R. in future forever. Also, if such a violation comes to the notice of Department before date of start of work, the Engineer-in-Charge shall be free to forfeit the entire amount of earnest Money Deposit/Performance Guarantee.

I/We hereby declare that I/we shall treat the tender documents, drawings and other records connected with the work as Secret / Confidential documents and shall not communicate information / derived there from to any person other than a person to whom I/we am/are may authorized to communicate the same or use the information in any manner prejudicial to the safety of the State.

Dated.....

Signature of Contractor.....

Witness.....

Postal Address.....

Postal Address.....

Telephone No.....

Occupation .....

Fax.....

E-Mail.....

E-Mail.....

### ACCEPTANCE

The above tender (as modified by you as provided in the letters mentioned hereunder) is accepted by me for and on behalf of the President of India for a sum of Rs..... (Rupees ..... )

The letters referred to below shall form part of this contract agreement.

- i) .....
- ii) .....
- iii) .....

Dated.....

For & on behalf of the President of India.

Signature .....  
Executive Engineer (E)-Project

### SCHEDULES

#### SCHEDULE 'A'

Schedule of quantities

- As per schedule enclosed

#### SCHEDULE 'B'

Schedule of materials to be issued to the contractor:-

| Sr. No.       | Description of item | Quantity | Rate in figures & words at which the material will be charged to the contractor | Place of issue |
|---------------|---------------------|----------|---------------------------------------------------------------------------------|----------------|
| -----NIL----- |                     |          |                                                                                 |                |

#### SCHEDULE 'C'

Tools and plants to be hired to the contractor

| S.NO          | DESCRIPTION | HIRE CHARGES PER DAY | PLACE OF ISSUE |
|---------------|-------------|----------------------|----------------|
| -----NIL----- |             |                      |                |

#### SCHEDULE 'D'

|                                                                           |                         |
|---------------------------------------------------------------------------|-------------------------|
| Extra schedule for specific requirements/ documents for the work, if any. | As per tender documents |
|---------------------------------------------------------------------------|-------------------------|

#### SCHEDULE 'E'

|                                                     |                                                                                                                                    |
|-----------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------|
| <b>Reference to General Conditions of Contract.</b> | General Conditions of contract for CPWD Works 2020 for maintenance work as amended/ modified up to last date of submission of bid. |
|-----------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------|

|                        |                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Name of Work:</b>   | <b>ARMO E&amp;M services at DDB Tower-A, Mandi House, New Delhi. (SH: Providing 4way cassette type indoor units at 5th floor)</b>                                                                                                                                                                                                                                                                                                    |
| Estimated Cost of work | <b>Rs.20,18,747/-</b>                                                                                                                                                                                                                                                                                                                                                                                                                |
| Earnest Money          | <b>Rs.40,375/-</b>                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Performance Guarantee  | (a)Performance Guarantee <b>5% of tendered value or estimated cost put to tender (ECPT) (whichever is higher).</b><br>(b) Where the tendered amount is less than eighty percent (80%) of the estimated cost put to tender ( ECPT), the performance guarantee, in addition to the requirement under (a) above, shall be increased by an amount equal to the difference between eighty percent (80%) of the ECPT and the tender amount |
| Security Deposit.      | Security Deposit <b>2.5% (Two Point Five per cent)</b> of accepted tendered amount.                                                                                                                                                                                                                                                                                                                                                  |

**SCHEDULE 'F':- General Rules & Directions:-**

|  |                                                                                                                                                           |                                                                         |
|--|-----------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------|
|  | Officer Inviting Tender                                                                                                                                   | Executive Engineer [E]-P, CCW, AIR, 5th. Floor, Soचना Bhawan, New Delhi |
|  | Maximum percentage for quantity of items of work to be executed beyond which rates are to be determined in accordance with <b>Clauses 12.2 &amp; 12.3</b> | <b>50%</b>                                                              |

**Definitions:-**

|              |                                                                                |                                                                                      |
|--------------|--------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|
| 2(v)         | Engineer-In-Charge                                                             | Executive Engineer [E]-Project, CCW, AIR                                             |
| 2(viii)<br>) | Accepting Authority                                                            | Executive Engineer [E]-Project, CCW, AIR                                             |
| 2(x)         | Percentage on cost of materials and labour to cover all overheads and profits. | 15%                                                                                  |
| 2(xi)        | Standard Schedule of Rates                                                     | Local Market Rates & DSR 2022 & VRV-DSR2019                                          |
| 2(xii)       | Department                                                                     | Civil Construction Wing, All, India, Radio                                           |
| 9(ii)        | Standard CPWD Contract Form                                                    | GCC EPC Projects 2022 as modified and corrected up to last date of submission of bid |

|      |                                                                                                                                                                            |                                                                                                                                                                                                                                  |
|------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|      | <b>Clause-1:-</b>                                                                                                                                                          |                                                                                                                                                                                                                                  |
| (i)  | Time allowed for submission of performance guarantee after date of issue of letter of acceptance                                                                           | 07 days                                                                                                                                                                                                                          |
| (ii) | Maximum allowable beyond the period as provided in (i) above                                                                                                               | 03 Days [This period can be further extended at the written request by the Contractor by the Engineer-In-Charge for a maximum period ranging from 1 to 02 Months with late fee @ 0.1% per day, of performance guarantee amount]. |
|      | <b>Clause-2:-</b>                                                                                                                                                          |                                                                                                                                                                                                                                  |
| I.   | Authority for fixing compensation under clause-2                                                                                                                           | Superintending Engineer[E], CCW, AIR, Soochna Bhawan New Delhi                                                                                                                                                                   |
| II.  | Whether clause-2A shall be applicable                                                                                                                                      | Not Applicable                                                                                                                                                                                                                   |
|      | <b>Clause-5:-</b>                                                                                                                                                          |                                                                                                                                                                                                                                  |
|      | No. of days from the date of issue of letter of acceptance for reckoning date of start                                                                                     | 10 Days                                                                                                                                                                                                                          |
|      | <b>Time allowed for execution of work</b>                                                                                                                                  | <b>02 Months</b>                                                                                                                                                                                                                 |
|      | <b>Authority to decide</b>                                                                                                                                                 |                                                                                                                                                                                                                                  |
| i.   | Extension of time for completion of work                                                                                                                                   | Executive Engineer [E]-Project, CCW, AIR, Delhi                                                                                                                                                                                  |
| ii.  | Re-scheduling of Mile stone                                                                                                                                                | Executive Engineer [E]-Project, CCW, AIR, Delhi                                                                                                                                                                                  |
|      | <b>Clause-6, 6A:-</b>                                                                                                                                                      |                                                                                                                                                                                                                                  |
|      | Clause applicable - (6 or 6A)                                                                                                                                              | <b>Clause-6</b>                                                                                                                                                                                                                  |
|      | <b>Clause-7:-</b>                                                                                                                                                          |                                                                                                                                                                                                                                  |
| i    | Gross work to be done together with net payment / adjustment of advances for material collected, if any, since the last such payment for being eligible to interim payment | As per value of work done                                                                                                                                                                                                        |
| ii   | Whether clause 7A shall be applicable                                                                                                                                      | <b>YES</b>                                                                                                                                                                                                                       |
|      | <b>Clause 10 A :-</b>                                                                                                                                                      | To be arranged by the agency                                                                                                                                                                                                     |

|             |                                                                                                    |                                                                                                                                                                                       |
|-------------|----------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|             | <b>Clause 10 B (ii) :-</b>                                                                         |                                                                                                                                                                                       |
| (i)         | Whether Clause 10 B (ii) shall be applicable                                                       | Not Applicable                                                                                                                                                                        |
|             | <b>Clause-10C:-</b>                                                                                |                                                                                                                                                                                       |
| (i)         | Component of labour expressed as percent of value of work:-                                        | <b>20 %</b>                                                                                                                                                                           |
|             | <b>Clause-10-CC:-</b>                                                                              |                                                                                                                                                                                       |
|             | Clause 10CC to be applicable in contract with stipulated period of completion exceeding the period | <b>Not Applicable</b>                                                                                                                                                                 |
|             | <b>Schedule of component of other materials, Labour, POL etc. for price escalation:-</b>           |                                                                                                                                                                                       |
|             | Component of civil (Except materials covered under clause 10 CA)/                                  | 'Xm' Nil %                                                                                                                                                                            |
|             | Electrical construction materials expressed as percent of total value of work.                     | 80 %                                                                                                                                                                                  |
|             | Component of labor expressed as percent of total value of work.                                    | 'Y' 20 %                                                                                                                                                                              |
|             | Component of P.O.L. expressed as percent of total Value of work.                                   | 'Z' Nil %                                                                                                                                                                             |
|             | <b>Clause-11:-</b>                                                                                 |                                                                                                                                                                                       |
|             | Specifications to be followed for execution of work                                                | <b>CPWD General Specification for Electrical Works Part-I Internal -2013, Part-II External -1994, Part-IV (Sub-station) 2013, HVAC (2017) as amended up to date, relevant BIS/IEC</b> |
|             | <b>Clause-12:-</b>                                                                                 |                                                                                                                                                                                       |
| 12.2 & 12.3 | Deviation limit beyond which clause 12.2 & 12.3 shall apply for building work                      | <b>No limit being maintenance work</b>                                                                                                                                                |
| 12.5        | Deviation limit beyond which clause 12.2 & 12.3 shall apply for foundation works                   | Not applicable                                                                                                                                                                        |
|             | <b>Clause-16:-</b>                                                                                 |                                                                                                                                                                                       |
|             | Competent Authority for deciding reduced rates.                                                    | The Executive Engineer [E] P                                                                                                                                                          |

**Clause-36 (i)**

| S/<br>N | Minimum<br>Qualification of<br>Technical<br>Representative | Discipline | Designation<br>[Principal<br>Technical/<br>Technical<br>Representati<br>ve] | Minimum<br>Experience | Number | Rate at which<br>recovery shall<br>be made from<br>contractor in<br>the event of<br>non-<br>deployment |
|---------|------------------------------------------------------------|------------|-----------------------------------------------------------------------------|-----------------------|--------|--------------------------------------------------------------------------------------------------------|
| NIL     |                                                            |            |                                                                             |                       |        |                                                                                                        |

**Mile Stone -**

| Sr.<br>No.    | Description<br>of<br>milestone [Physical] | Time allowed in<br>days<br>[from date of start] | Amount to be withheld in<br>case of non- achievement of<br>milestone |
|---------------|-------------------------------------------|-------------------------------------------------|----------------------------------------------------------------------|
| -----NIL----- |                                           |                                                 |                                                                      |

**Executive Engineer [E] P**

### **FORM OF PERFORMANCE SECURITY (BANK GUARANTEE BOND)**

1. In consideration of the President of India (hereinafter called "The Government") having offered to accept the terms and conditions of the proposed agreement. No.....dated ..... made between..... and .....(Hereinafter called "the said contractor(s)") .....for the work ..... (hereinafter called "the said agreement") having agreed to production of a irrevocable bank guarantee for Rs.....(Rupees..... only) as a security / guarantee from the contractor(s) for compliance of his obligations in accordance with the terms and conditions in the said agreement, we..... (indicate the name of the bank) (Hereinafter referred to as "the Bank") hereby undertake to pay to the Government an amount not exceeding Rs. .... (Rupees.....only) on demand by the Government.
  2. We .....(indicate the name of the bank) do hereby undertake to pay the amounts due and payable under this guarantee without any demure, merely on a demand from the Government stating that the amount claimed as required to meet the recoveries due or likely to be due from the said contractor(s). Any such demand made on the bank shall be conclusive as regards the amount due and payable by the bank under this Guarantee. However, our liability under this guarantee shall be restricted to an amount not exceeding Rs.....(Rupees..... only).
  3. We, the said bank further undertake to pay to the Government any money so demanded notwithstanding any dispute or disputes raised by the contractor(s) in any suit or proceeding pending before any court or tribunal relating thereto, our liability under this present being absolute and unequivocal.
- The payment so made by us under this bond shall be a valid discharge of our liability for payment there under and the contractor(s) shall have no claim against us for making such payment.
4. We..... (indicate the name of the bank) further agree that the guarantee herein contained shall remain in full force and effect during the period that would be taken for the Performance of the said agreement and that it shall continue to be enforceable till all the dues of the Government under or by virtue of the said agreement have been fully paid and its claims satisfied or discharged or till engineer-in-charge on behalf of the government certified that the terms and conditions of the said agreement have been fully and properly carried out by the said contractor(s) and accordingly discharges this guarantee.
  5. We .....(indicate the name of the bank) further agree with the Government that The Government shall have the fullest liberty without our

consent and without effecting in any manner our obligations hereunder to vary any of the terms and conditions of the said agreement or to extend time of Performance by the said contractor (s) from time to time or to postpone for any time or from time to time any of the powers exercisable by the Government against the said contractor(s) and to forbear or enforce any of the terms and conditions relating to the said agreement and we shall not be relieved from our liability by reason of any such variation, or extension being granted to the said contractor(s) or for any forbearance, act of omission on the part of the Government or any indulgence by the Government to the said contractor(s) or by any such matter or thing whatsoever which under the law relating to sureties would, but for this provision, have effect of so relieving us.

6. This guarantee will not be discharged due to the change in the constitution of the Bank or the contractor(s).
7. We (indicate the name of the bank) lastly undertake not to revoke this guarantee except with the previous consent of the Government in writing.
8. This guarantee shall be valid upto ..... Unless extended on demand by Government. Notwithstanding anything mentioned above, our liability against this guarantee is restricted to Rs..... (Rs .....only) and unless a claim in writing is lodged with us within six months of the date of expiry or the extended date of expiry of this guarantee all our liabilities under this guarantee shall stand discharged.

Dated the..... day of.....for

.....

..... (Indicate the name of bank).

#### **TERMINATION OF CONTRACT ON DEATH OF CONTRACTOR**

Without prejudice to any of the rights or remedies under this contract, if the contractor dies during the progress of work, the Engineer-in-charge on behalf of the President of India, shall have the option of terminating the contract without compensation to the contractor's legal heir(s). Further, any sum recoverable from the contractor shall be recovered from any amount of the contractor available under this contract or any other contract and only the balance amount after such recovery shall be payable to the legal heir(s) of the contractor upon his death.

**ADDITIONAL TERM AND CONDITIONS**

**Name of work: ARMO E&M services at DDB Tower-A, Mandi House, New Delhi. (SH: Providing 4way cassette type indoor units at 5th floor).**

1. The work shall be executed as per relevant CPWD General Specifications amended up to date and as per direction of Engineer-in-Charge/other technical specifications.
2. Rates should be quoted inclusive all tax and GST.
3. The work is to be carried out at secure & sensitive place. Agencies, intending to participate, are advised to visit site before tendering. Being a functional station, working hours may be restricted; hence nothing shall be paid extra on account of wastage / loss of labour etc.
4. All the materials should confirm to relevant BIS Specification/relevant international specification. Before actual use at site, the materials shall be got approved from Engineer-in-Charge who has the right to verify the genuineness of the material supplied and the decision of Engineer-in-Charge shall be final.
- 5. The Agency submit the warrantee/guarantee certificate of whole installation, moving & stationary parts, copper tubing , coils , PCB , remote control etc. & leakages for one year after handing over the installation to the department**
6. No Tools and Plants shall be issued to the contractor.
7. Free water & power supply shall be supplied to the contractor during installation, testing & commissioning period.
8. The watch & ward of the materials or installed at site shall be responsibility of the contractor till the installations are successfully commissioned and handed over to the department.
9. As far as possible storable space shall be provided by the department for storing materials.
10. Contractor shall be responsible for conduct of staff/workers deployed at site.
11. The contractor shall take all safety measures while executing the work. Loss of life/damage/accident etc. shall be the sole responsibility of the contractor and no compensation shall be payable by the department.
12. The firm shall submit necessary test certificates of the materials and equipments of the manufacturer before finalization of work.
13. The work shall be carried out by the specialized workers only upto entire satisfaction of Engineer in charge.

14. All the false ceiling work /civil work for the VRF/VRV work will be done by contractor.  
Any damage to the false ceiling /building during execution of work shall be made good by the contractor matching with the original, otherwise the same shall be got done at the cost of working contractor
15. All debris etc. shall be removed from the site of work daily.
16. The contractors are advised not to upload any conditional tender. All conditional tenders shall be summarily rejected.
17. The Executive Engineer [E]-Project shall have the option to terminate the contract at his discretion after serving two week notice without assigning any reasons and without prejudice to Government right and to take action under any other clause of the agreement.
18. The agency shall visit the site before quoting the rates, work is time bound and shall be executed in given time schedule.
19. Acceptable make:-

| <b>Description</b>                       | <b>Make</b>                  |
|------------------------------------------|------------------------------|
| <b>VRV/VRF Cassette type indoor unit</b> | Daikin                       |
| <b>Copper Pipe</b>                       | Mandive/ Mexflow/ Mitsubishi |
| <b>Nitrile Tube insulation</b>           | K-Flex/ A-Flex/ Armaflex     |
| <b>Copper/ Aluminium Cable</b>           | Polycab/ RR/ Havells         |
| <b>MCB DB</b>                            | L&T/ C&S / LEgrand           |

**Executive Engineer [E] P**

## Technical Specification

### VRV / VRF System

#### **1. General**

- 1.1 The equipment for variable refrigerant volume/flow (VRV/VRF) system shall be air-cooled consisting of Outdoor units and multiple Indoor units for cooling the space in summer and heating in winter.
- 1.2 The system shall consist of suitable Outdoor units, Indoor units as required, interconnecting refrigerant piping, control cabling and accessories as required.
- 1.3 It shall be possible to connect multiple Indoor units on a single refrigerant circuit. The Indoor units on any circuit may be of different type and should allow individual control.
- 1.4 The minimum length of Refrigerant piping in a branch circuits or all circuits shall be as per chart given later on but the total piping length shall not be less than 200 m.

#### **2. Outdoor Unit (if applicable)**

- 2.1 The Outdoor unit shall be a factory assembled unit housed in a sturdy weather proof casing, constructed from rust-proofed mild steel panels complete with powder coated finish.
- 2.2 Each module of Outdoor units shall consist of inverter type scroll/rotary compressor(s), air-cooled condenser as Heat Exchanger, high efficiency propeller fans with low noise motor, internal Refrigerant piping, safety controls, Air Inlet grilles, fan protection grille etc. all enclosed in weather proof housing.
- 2.3 The Outdoor unit shall have multiple scroll /rotary compressors and shall be able to operate even in case of breakdown of one of the compressors.
- 2.4 The Outdoor unit shall be suitable for mix and match connection of various types and capacities of Indoor units as per demand.
- 2.5 The noise level shall not be more than 62 dB under normal operation, measured horizontally, 1 m away and 1.5m above ground.
- 2.6 The Outdoor unit shall be modular in design and shall allow for side by side installation of multiple Outdoor units, to match the requirement.
- 2.7 All the units shall be provided with built-in microprocessor control panel, for automatic operation and capacity control.
- 2.8 The units shall be suitable for Refrigerant **R-410A**.

#### **3. Compressor**

- 3.1 Each unit shall have single/multiple hermetically sealed scroll /rotary compressor.
- 3.2 The scroll compressor shall consist of two spiral disc, where one is fixed and the other rotate. The disc shall be mounted eccentrically to allow orbital movement. This shall permit compression of Refrigerant gas, as it moves up between the eccentric discs. Both the spiral disc out rotor shall be mounted on a common shaft with antifriction bearing, suitable for handling both radial and axial thrust.

- 3.3 The compressor casing shall be fabricated from mild steel of thickness capable of withstanding the working pressures. The casing shall have built-in oil reservoir with a sump of adequate capacity.
- 3.4 The compressor shall be complete with a suitable High efficiency motor hermetically sealed within the compressor housing.
- 3.5 The compressor housing shall also have oil reservoir for lubrication and suitable means like an oil pump or pressure differential device shall be provided to lubricate all moving parts.
- 3.6 All the compressors in each module shall be provided with suitable sine wave or equivalent DC Inverter for capacity modulation.

#### **4. Condenser / Heat Exchanger and Fans**

- 4.1 The condenser shall be air-cooled type, where heat exchanger shall be fabricated from copper tubes, mechanically bonded to aluminum fins to form a cross fin coil. The aluminum fins shall be given anti-corrosion treatment. This treatment shall be suitable for areas of high pollution, moisture and salt laden air.
- 4.2 The condenser fans shall be with multi blades of aerofoil design for low noise level, high efficiency and fitted with a high efficiency fan motor.
- 4.3 The fan outlet shall be protected by a suitable wire guard on the outside.
- 4.4 Suitable devices and heat exchanger means shall be built-in the unit to provide maximum super-cooling of refrigerant to increase system efficiency.
- 4.5 The unit shall be complete with safety controls and suitable microprocessor based master control module.
- 4.6 The module should be capable of connecting to web or to other devices through common Bacnet or Lan networks.
- 4.7 All the above component shall be housed in a compact mild steel cabinet having air Inlet louvers, safety guard on the condenser fan. The ambient shall be made weather proof using suitable anti corrosion treatment and finishing point.

#### **5. Indoor Units (IDU)**

- 5.1 The system shall permit connection of a variety of non duct-able Indoorunits on to single refrigerant piping circuits, as per description given later.
- 5.2 The capacity of the IDU shall vary as per the requirement of the given area.
- 5.3 The types of IDU which may be connected may be any of these given below:
  - 5.3.1 High Wall mounted Unit.
  - 5.3.2 Cassette type of different configuration.

#### **5.4 Common features of Indoor Units**

- 5.4.1 The cooling / heating evaporator coils of the various types of Indoor Units shall be of direct expansion type.

- 5.4.2 The coils shall be fabricated from copper tubes of min 8 mm dia. with extended aluminum fins and designed for low velocity.
- 5.4.3 The fins shall be bonded to the tube using hydraulic expansion of tubes ensuring tight bonding between tube and fins for efficient heat transfer.
- 5.4.4 The coils shall be complete with well designed tube circuiting and liquid distributor.
- 5.4.5 All types of units shall have a built in electronic expansion valve and suitable control units.
- 5.4.6 The control units shall control temperature, fan speed and features specific to each unit such as night mode, set back, etc.
- 5.4.7 Suitable drain pan and drain arrangement shall be part of all IDUS.
- 5.4.8 The control units shall permit control from a corded or a wireless remote controller.

## **6. High Wall Mounted units**

- 6.1 The high wall mounted units will be complete with cross flow fan, vertical DX coil, filters, control units and plastic outer cabinet.
- 6.2 The cross flow fan should be of generous dia. and length to deliver the required air quantity at high speed and be very quiet with Noise level below 38 db.
- 6.3 The fan assembly shall be directly mounted on a low noise, high efficiency motor.
- 6.4 The DX evaporator coil and other common features shall be as given under para 5.3
- 6.5 The air filter shall be of suitable design to remove dust, pollen and other impurities.
- 6.6 The outer casing shall be made of high grade plastic, complete with return air grille, motorized supply air louvered opening and suitable metallic back panel for mounting all items.

## **7. Cassette type units**

- 7.1 The cassette type Indoor Units may be of any of the three configurations, as given below and as may be mentioned in Bills of quantity.
  - 7.1.1 Four way or circular air distribution arrangement whichever is specified or is available.
  - 7.1.2 2-way air distribution arrangement.
  - 7.1.3 1-way or corner type air distribution arrangement.
- 7.2 The unit shall be complete with turbo fans of multi blade type, duly statically and dynamically balanced to give the required air flow.
- 7.3 The filter shall be of synthetic type to suit the configuration.
- 7.4 The unit housing shall have provision for connecting fresh air duct, wherever required.

- 7.5 The unit shall be complete with built-in high head fail-safe pump with safety cutouts.
- 7.6 The unit shall include all items as given in 5.3
- 7.7 Each type of unit shall be supplied complete with [Air distribution panel](#) whether specified or not.
- 7.8 The panel shall have removable return air core for cleaning air filter and maintaining motor etc.

## **8. Indoor Control Unit**

8.1 All types of indoor unit shall have one of the following controllers:

- 8.1.1 Cordless Type
- 8.1.2 Corded Type

8.2 Unless otherwise specified the controller to be provided shall be as follows:

- 8.2.1 **Cordless Remote:** Wall units or other units which are located in an enclosed cabin.
- 8.2.2 **Corded Remote:** in open offices or and areas not covered above.

- 8.3 A Computerized DIP control shall be used to maintain room temperature.
- 8.4 The unit shall be equipped with a self-diagnosis for easy and quick maintenance and service.
- 8.5 The LCD (Liquid Crystal Display) remote controller shall memorize the latest malfunction code for easy maintenance.
- 8.6 It shall be able to control up to 16 Indoor units and change fan speed individually in the group.

## **9. Refrigerant Piping Capabilities**

- 9.1 The unit shall be capable of long length of piping and for providing lift of Refrigerant due to level difference between the Outdoor unit and Indoor units at the highest levels.
- 9.2 The minimum distance capability of the unit shall be as follows :
  - 9.2.1 Total Piping length of system                      Min.    300 m.
  - 9.2.2 Actual length in any circuit                              Min.    150 m.
  - 9.2.3 Equivalent piping length any circuit                      Min.    175 m.
  - 9.2.4 Level difference between ODU and IDU                      Min.    50 m.

## 10. **Refrigerant Piping**

10.1 All refrigerant piping for the VRV/VRF system shall be carried out using hard drawn seamless copper pipe using either soft, half hard or hard pipes as per chart below:

10.1.1 The piping thickness shall be as follows:

| OD(Inch) | OD(mm) | Min. Wall Thickness (mm) | Soft | Half Hard or Hard |
|----------|--------|--------------------------|------|-------------------|
| 1/4"     | 6.40   | 1.2                      | ✓    | ✓                 |
| 3/8"     | 9.50   | 1.2                      | ✓    | ✓                 |
| 1/2"     | 12.70  | 1.2                      | ✓    | ✓                 |
| 5/8"     | 15.90  | 1.2                      | ✓    | ✓                 |
| 3/4"     | 19.10  | 1.2                      | ✓    | ✓                 |
| 7/8"     | 22.20  | 1.2                      | X    | ✓                 |
| 1.1/8"   | 28.60  | 1.2                      | X    | ✓                 |
| 1.3/8"   | 34.90  | 1.62                     | X    | ✓                 |
| 1.5/8"   | 41.30  | 1.62                     | X    | ✓                 |

10.2 The branching of refrigerant piping from the main line shall be carried out using either specially designed 'Tee' connectors or 'Y' joints. These joint should ensure that each branch receives the required refrigerant flow.

10.3 All pipe sizing shall be on the basis of sizing data of the concerned manufacturer and should ensure adequate oil return back up to the compressor.

## 11. **Pipe Insulation**

### 11.1 **Refrigerant Pipe Insulation**

11.1.1 The whole of the liquid and suction refrigerant lines including all fittings, valves and strainer bodies, etc. shall be insulated with 19mm /13 mm thick Nitrile close cell rubber, so that condensation does not occur.

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

### 12. **Drain pipe insulation**

12.1 Drain pipe carrying condensate water shall be insulated with 6 mm nitrile rubber insulation having K value 0.037 W/mk at a mean temperature of 20°C at min. density of 55 kg./m<sup>3</sup>.

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

### **Miscellaneous**

- 13.1 The unit shall have a corded electronic remote control housing ON/OFF and speed control, temperature control and digital display.
- 13.2 Isolation spring shall be provided to hang the Indoor units and isolation pad to be provided for the outdoor units.
- 13.3 Drain line shall be provided from Indoor unit upto drain trap. (To be priced separately).
- 13.4 Suitable M.S. angle iron supporting frame shall be provided for the condensing unit and ceiling suspended arrangement for the indoor units.
- 13.5 Interconnecting power and control cabling shall be provided between condensing unit and evaporator unit.

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### **Electric Cabling**

#### **1. General**

The electric cable connections of motors and earthing of all equipments shall be carried out, as per specifications, given hereunder.

#### **2. Cabling**

- 2.1 The cabling of various equipments shall be carried using PVC Insulated and armoured FRLS cables.
- 2.2 The PVC armoured FRLS power cable for use on 415 volts system shall be 3 or 3.5 Core with aluminium conductors and be of 660/1100 volts grade, as per IS 1554 (Part I) 1964. The cross section of the cable shall be to suit the load and rating of the equipment. The cables shall be of aluminium conductor, PVC insulated, strip armoured with overall PVC sheathing.
  - 2.2.1 The cables shall be laid as per IS-1255/1967, Indian standard code of practice.
  - 2.2.2 The cables shall be laid, as per drawings in the ducts/pipes/trays etc. along a short and convenient route between switch board and the equipment, (either in trenches, on wall or on hangers, supported from the slab). Cable routing shall be checked at the site of work to avoid interference with structure, equipment etc. Where more than one cable is running close to each other, proper spacing should be provided between them.
  - 2.2.3 The radius of bends of the cable should not be less than 12 times the overall dia. of cable in order to prevent undue stress and damage at the bends, the cables should be supported with wooden cleats on M.S. Supports, when laid in trenches, or wall/ceiling suspended hangers. When laid underground the cables should be covered with fine soft

earth and protected with 2nd Class bricks. Suitable G.I. Pipe shall be used wherever cables are laid under the roads etc.

- 2.2.4 Wooden bushes shall be provided at the ends of pipes through which cables are connected through.

### **3. Surface Wiring**

- 3.1 The surface wiring shall be cased in conduits which shall be of 1100 volts grade and conform to IS 9587-1987 (revised to date)
- 3.1.1 The conduits used shall be of high quality & all joints shall be made with sockets. The bends and elbows shall have inspection covers fixed with grease free screws. The joints shall be water tight. Approved metal saddles shall be used to secure the exposed conduits at a space of 1 meter or less. The connection of the conduits to switches etc., shall be secured by check nuts and ebonite bushes provided at the ends of conduits.
- 3.1.2 The G.I conduits shall be heavy duty and rigid type-ISI marked/conforming to IS specifications. The wall thickness shall not be less than 2 mm. For conduits above 32 mm dia. Metallic conduits of 20 mm dia. and below shall not be used. Conduit accessories (Boxes etc.) shall conform to IS-5133-1968 and IS-2667-64 (amended-revised to date). Conduit pipes shall be jointed, wherever necessary by means of screwed couples and screwed accessories only. In Long distance straight, run of conduits inspection type couplers at suitable intervals shall be provided.
- 3.1.3 Threads on conduit pipes shall be between 13 mm to 19 mm long.
- 3.1.4 The wiring shall be carried-out as per IS 732-1989 (Amended and revised to date).
- 3.2 Flush inspection covers shall be provided in case of Concealed, recessed conduits. The staples for the conduits shall not be spaced more than 0.60 meters apart. Before filling up the chase with concrete the conduits should be given a coat of rust proof paint.
- 3.3 The wires shall be drawn only after all the conduits have been properly fixed in position. Fish wires (steel wire: 16 SWG) shall be laid in conduits for drawing of wires subsequently.

### **4. Control Cabling/wiring**

- 4.1 FRLS Control cables shall be 1100 volts grade, as per IS 1554, made from copper conductor of 1.5 Sq mm PVC insulated single Core, strip armored with an overall PVC sheathing.
- 4.2 The cables and conduits wiring shall be carried out as per details given under 2.2 and 2.3 above.

## **6. Miscellaneous**

- 6.1 The final connections to the equipment shall be through Flexible connections in case of conduit wiring and also where the equipment is likely to be moved back and forth, such as on slide rails.
- 6.2 An isolator switch shall be provided at any motor which is separated from the main switch panel by a wall or partition or other barrier or is more than 15 metres away from the main panel.
- 6.3 Two separate and distinct earthing conductors shall be Connected from the equipment upto the main switch board panel.
- 6.4 The branch lines from the main panel to each equipment shall be separated and should not cross other lines.
- 6.5 The entire installation shall be tested as per Electricity rules and I.S.S. 732-1973 with amendments 1,2&3 prior to the commissioning of the plant and a suitable test report furnished by a competent and authorized person. The test report will be obtained by contractor himself at his own expenses.
- 6.6 All exposed switch board panels, conduits; hangers etc. shall be given 2 coats of suitable paint of approved colour, when all work has been completed.

## **Testing and Commissioning**

### **1. General**

- 1. 1 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 architect, in accordance with the provisions of the applicable ASHRAE standards or approved equal in addition to furnish necessary test certificates from manufacturers.
- 1.2 The system shall then be commissioned, tested and balanced to fulfil the intent and purpose for which it is designed.
- 1.3 In addition continuous Run Tests shall be carried out during peak weather condition.

### **2. Compressors Condensers/Out Door Units/Evaporators**

- 2.1 Hydraulic test for various components and assembled equipments at 1.5 times design pressure or double the operating pressure, whichever is higher.
- 2.2 Pneumatic leak test after assemblies at design pressure
- 2.3 Static and dynamic balancing on electronic precision machine for rotating parts, links, impeller/ crank shaft assemblies etc.
- 2.4 Testing of oil pressure in compressor at 1.5 times pump discharge pressure.

2.5 Pressure drop test for condenser, chiller and evaporator.

2.6 For compressor assembly, electronic leak, air running test, pneumatic test with dry nitrogen and leak test in water.

**3. Indoor Units**

3.1 Performance test as per applicable codes.

**3.2 Coils**

3.2.1 Pneumatic test.

**3.3 Filters**

3.3.1 Test of filter elements as per B.S. 2831 B.S. 1701 as applicable. This is to ascertain filtration efficiency by weight at inlet and outlet.

3.3.2 Manufacturer's test certificates also to be produced for the assembled unit. Final dimensional check will be done. Inspection may be done during assembly of components for quality of workmanship, painting etc.

**3.4 Piping**

Materials check for specifications and size.

**3.5 Instruments and Controls**

Visual examination

**3.6 Special Note**

Vendor to note that above procedure is to be followed in addition to the specifications attached with the tender.

**4. Associated Works at Site:**

4.1 Inspection of raw materials to be used for fabrication and assembly and inspection of manufacturer's certificates.

4.2 Inspection of welding including welders qualification as desired by inspection engineers. Inspection of fabricated items.

4.3 Pressure testing of pipe fittings used for the refrigerant and water and other services.

4.4 Checking of electrical circuits (power & controls) and checking functioning of controls of refrigerant systems and other circuits of air conditioning plant.

4.5 Checking of calibration of controls and instrumentation

4.6 Performance testing of completes VRV/VRF system as per specifications.

**5. Vendor Responsibility**

- 5.1 The above inspection procedure is given for general guidance and information of vendors. The inspection of purchaser/consultant is strictly not limited to these.
- 5.2 The inspection engineer of purchaser/consultant will have full right, to have detailed inspection at any stage right from placement of order to completion of project, as and when desired by inspection engineer.
- 5.3 Co-ordination of inspection agency of purchaser/consultant with his factory/sub-vendor's factory/erection site will be the sole responsibility of successful vendor, subsequent to placement of order for complete air conditioning plant, covered under these technical specifications.

**6. Piping System**

- 6.1 In general pressure tests shall be applied to piping only before connection of equipment and appliances. In no case shall piping, equipment or appliances be subjected to pressure exceeding their test ratings.
- 6.2 Tests shall be completed and approved before any insulation is applied.
- 6.3 After tests have been completed, the system shall be drained and cleaned of all dust and foreign matter. All strainers, valves and fittings shall be cleaned of all dirt, fittings, and debris.

**Executive Engineer [E] P**

**Schedule of work**

Name of work:- **ARMO E&M services at DDB Tower-A, Mandi House, New Delhi. (SH: Providing 4way cassette type indoor units at 5th floor).**

| Sl. No. | Description of Item                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Qty. |      | Unit | Rate | Amount |
|---------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|------|------|------|--------|
| A)      | VRF/VRV AC SYSTEM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |      |      |      |      |        |
| 1       | Supplying, Installation, Testing and Commissioning of following minimum capacity 4 way Cassette Type Indoor ceiling mounted unit equipped with synthetic washable media pre-filter, fan section with low noise fan/dynamically balanced blower, multispeed motor, coil section with DX Copper coil, electronic expansion valve, outer cabinet, drain pump, grill, necessary supports, vibration Isolation, Corded remote control etc., suitable for operation on single phase 230 V $\pm$ 10%, 50Hz AC supply, complete, as required. The Indoor units must shut down upon receiving a signal from the BMS System/Fire Signals. The system shall be capable to adjust air flow as per room requirement in auto mode. The cooling capacity of indoor unit will be at air inlet conditions of 27 OC DB and 19 OC WB temperature. (Make will be same as of Outdoor) |      |      |      |      |        |
| (a)     | 0.8 Tr                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 10   | Nos  | Each |      |        |
| (b)     | 1 Tr                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 4    | Nos  | Each |      |        |
| (c)     | 1.6 Tr                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 1    | Nos  | Each |      |        |
| (d)     | 2 Tr                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 9    | Nos  | Each |      |        |
| (e)     | 4.1 Tr                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 4    | Nos  | Each |      |        |
| 2       | Supplying, Installation, Testing and Commissioning of Y/T/Multi Joints. Joints shall be of same Original Equipment Manufacturer (OEM) make as of ODU's and IDUs                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |      |      |      |      |        |
| (a)     | Indoor Units                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 26   | Nos  | Each |      |        |
| 3       | Supplying, Installation, testing and commissioning including vaccumiazation and Nitrogen testing of following nominal sizes of soft/hard drawn copper refrigerant piping for VRV/VRF system, complete with fittings, with suitable adjustable ring type hanger supports, jointing/brazing including accessories, insulated with XPLE Class-O tubular insulation/with Class-O closed cell elastomeric nitrile rubber tubular sleeves sections of 19 mm thick insulation as given below for Suction and Liquid lines, all accessories as per specifications etc. as required :                                                                                                                                                                                                                                                                                     |      |      |      |      |        |
| (a)     | 6.4 mm dia (OD) (Soft drawn) with tube thickness 1.2 mm                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 80   | Mtrs | Mtr  |      |        |
| (b)     | 9.5 mm dia (OD) (Soft drawn) with tube thickness 1.2 mm                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 130  | Mtrs | Mtr  |      |        |
| (c)     | 12.7 mm dia (OD) (Soft drawn) with tube thickness 1.2 mm                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 80   | Mtrs | Mtr  |      |        |
| (d)     | 15.86 mm dia (OD) (Soft drawn) with tube thickness 1.2 mm                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 100  | Mtrs | Mtr  |      |        |

|     |                                                                                                                                                                                                                                                                                                                                                           |     |      |        |  |  |
|-----|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|------|--------|--|--|
| (e) | 19 mm dia (OD) (Hard drawn) with tube thickness 1.2 mm                                                                                                                                                                                                                                                                                                    | 20  | Mtrs | Mtr    |  |  |
| (f) | 22.2 mm dia (OD) (Hard drawn) with tube thickness 1.2 mm                                                                                                                                                                                                                                                                                                  | 25  | Mtrs | Mtr    |  |  |
| (g) | 28.58 mm dia (OD) (Hard drawn) with tube thickness 1.2 mm                                                                                                                                                                                                                                                                                                 | 30  | Mtrs | Mtr    |  |  |
| 4   | Testing & Commissioning of Outdoor Units after installation of indoor units, liquid & discharge Gas Charging pipe line i/c cleaning evacuation of circuit, nitrogen pressure testing with complete satisfaction of Engineer-in-charge at 5th floor etc complete as required (for two outdoor circuits).                                                   |     |      |        |  |  |
| (a) | 24.0/26.0 HP HEAT PUMP                                                                                                                                                                                                                                                                                                                                    | 2   | Job  | Job    |  |  |
| 5   | Supplying & fixing following sizes of CPVC pipe for condensate water drain with necessary accessories such as socket elbow 6mm thick closed cell nitrile rubber insulation etc. i/c connecting to each other at floors as per site requirement, testing complete as reqd. (Make: Sudhakar/Prakash/Prince/Astal/lindal)                                    |     |      |        |  |  |
| (a) | 25mm                                                                                                                                                                                                                                                                                                                                                      | 20  | Mtrs | Mtr    |  |  |
| (b) | 32mm                                                                                                                                                                                                                                                                                                                                                      | 150 | Mtrs | Mtr    |  |  |
| 7   | Supplying and fixing following way, horizontal type three pole and neutral sheet steel, MCB distribution board, 415 V, on surface/ recess complete with tinned copper bus bar, neutral bus bar, earth bar, din bar, interconnections, powder painted i/c earthing, dismantling the existing defective etc. as required. (But without MCB/ RCCB/ isolator) |     |      |        |  |  |
| a)  | 8 way (4+24), Double door                                                                                                                                                                                                                                                                                                                                 | 2   | Nos  | each   |  |  |
| 8   | Supplying Laying & fixing of following PVC insulated XLPE copper conductor armoured cable of 1.1 KV grade confirming to IS:7098 (part1) with upto date amendment as per following etc. Complete as reqd & as per direction of Engineer-in-charge.(Make: Havells/Grandlay/KEI)                                                                             |     |      |        |  |  |
| a)  | 4c x6 sq. mm                                                                                                                                                                                                                                                                                                                                              | 35  | Mtrs | Mtr    |  |  |
| 9   | Supplying & making indoor end termination with brass compression gland & Cu lugs for following sizes of PVC insulated and PVC sheathed/ XLPE Cu conductor cable of 1.1 KV grade as reqd                                                                                                                                                                   |     |      |        |  |  |
| (a) | 4C x 6sq mm                                                                                                                                                                                                                                                                                                                                               | 4   | Set  | Set    |  |  |
| 10  | Supplying and fixing of following sizes of medium class PVC conduit along with accessories in surface/recess including cutting the wall and making good the same in case of recessed conduit as required.                                                                                                                                                 |     |      |        |  |  |
| (a) | 20mm                                                                                                                                                                                                                                                                                                                                                      | 350 | Mtr  | Meters |  |  |
| (a) | 25mm                                                                                                                                                                                                                                                                                                                                                      | 400 | Mtr  | Meters |  |  |
| (b) | 32mm                                                                                                                                                                                                                                                                                                                                                      | 15  | Mtr  | Meters |  |  |

|     |                                                                                                                                                                                                                                                                                                                                                                                                         |     |      |      |  |  |
|-----|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|------|------|--|--|
| 11  | Removing of existing GI duct of central AC plant during the installation of VRF indoor unit of size approximate 2mtr x 2mtr i/c necessary scaffolding, removing of existing false ceiling of the standard size for the installation of indoor units, depositing the waste of duct i.e glass wool and joot in the near by garbage land & deposited the duct in electrical store etc complete as required | 11  | Job  | Job  |  |  |
| 12  | Repairing and providing of the existing false ceiling around the new cassette type AC unit and in area of 2mtr x 2mtr for installation of VRF indoor unit i/c fixing the frame in the ceiling for filling the gap in between the ceiling and cassette type indoor unit, ceiling levelling etc complete as required                                                                                      | 29  | Job  | Job  |  |  |
| 13  | Supplying and fixing 5 A to 32 A rating, 240/415 V, 10 kA, "C" curve, miniature circuit breaker suitable for inductive load of following poles in the existing MCB DB complete with connections, testing and commissioning etc. as required.                                                                                                                                                            |     |      |      |  |  |
| (a) | Single Pole                                                                                                                                                                                                                                                                                                                                                                                             | 48  | Nos. | Each |  |  |
| (b) | 63A 3 Pole MCB                                                                                                                                                                                                                                                                                                                                                                                          | 2   | Nos. | Each |  |  |
| (c) | 63A 4 Pole MCB                                                                                                                                                                                                                                                                                                                                                                                          | 2   | Nos. | Each |  |  |
| 14  | Supplying, laying & fixing of following sizes copper conductor round flexible cable ISI marked for use in connection in between outdoor & indoor connection etc complete as reqd.                                                                                                                                                                                                                       |     |      |      |  |  |
| (a) | 3 Core X 2.5 sq. mm Copper flexible round cable                                                                                                                                                                                                                                                                                                                                                         | 400 | Mtrs | Mtr  |  |  |
| (b) | 2 Core X 1.5 sq. mm Copper flexible round cable (communication cable)                                                                                                                                                                                                                                                                                                                                   | 300 | Mtrs | Mtr  |  |  |
|     | <b>Total Rs.</b>                                                                                                                                                                                                                                                                                                                                                                                        |     |      |      |  |  |

**Executive Engineer [E] P**