



DPSP-BIRD

Corrigendum – Addendum- Tender for Supply, Installation, Testing, Commissioning & Maintenance of Variable Refrigerant Volume / Variable Refrigerant Flow Air Conditioning System & Dismantling Of Old Air conditioning System at BIRD, Lucknow

Please refer to the tender Ref. No. BIRD.LKO/NIT/ 11 /DPSP-Central AC /2022-23 dated 15th December 2022 Supply, Installation, Testing, Commissioning & Maintenance of Variable Refrigerant Volume / Variable Refrigerant Flow Air Conditioning System & Dismantling Of Old Air conditioning System at BIRD, Lucknow.

1. Corrigendum, addendum, and clarifications in the tender are as per annexure provided herewith and will form part of the captioned tender.
2. The last date of submission tender is also been extended and last date of submission is 16th January 2023
3. All other terms and conditions of the tender remain unchanged.


(Anil Kumar Lal)

Deputy General Manager (Admin)

Annexure

1. COMPRESSOR

The compressor shall be highly efficient scroll/ rotary type and capable of inverter control. The inverter compressor shall change the speed in accordance to the variation in cooling load requirement:

- All outdoor units shall have multiple steps of capacity control to meet load fluctuation and indoor unit individual control. All parts of compressor shall be sufficiently lubricated stock. Forced lubrication may also be employed.
- Oil heater shall be provided in the compressor casing.
- **The Inverter compressor shall preferably be Reluctance DC inverter compressor for higher efficiency and improved reliability.**

2. Page No. 137 & 138 of tender stands removed.

3. List of approved makes – Addition as under:

1	Pre Fabricated Duct	Zeco/Techno/ Rolastar/ Technofeb
2	Cable Tray	Pilco / Slotco / MEM / BEC / Steelways / Legrand
3	VRV/VRF MANUFACTURER	DAIKIN/TRANE/MITSUBISHI ELECTRIC /CARRIER/TOSIHBA/HITACHI/LG/VOLTAS

4. Bank Guarantee format for EMD – Enclosed
5. Clarification in the pre-bid meeting-Enclosed
6. Revised BoQ (bill of Quantities) – Enclosed



Proforma of Bank Guarantee (in lieu of 10 % of Security Deposit)

(To be Stamped as a Security Bond - To be submitted on Non-judicial stamp paper of appropriate value purchased in the name of the issuing Bank)

No. _____

Date _____

The Director,
BIRD
Sector – H, LDA Colony, Kanpur
Road, LUCKNOW - 226012.

Dear Sir

Tender for Supply, Installation, Testing, Commissioning & Maintenance of variable Refrigerant Volume / Variable Refrigerant Flow Air Conditioning System & Dismantling Of Old Air conditioning System at BIRD, Lucknow.

WHEREAS

1. You have awarded a contract dated ----- for **Tender for Supply, Installation, Testing, Commissioning & Maintenance of variable Refrigerant Volume / Variable Refrigerant Flow Air Conditioning System & Dismantling Of Old Air conditioning System at BIRD, Lucknow.** at ----- to our constituents M/s., a ----
----- having Its Registered Office at -----
hereinafter referred to as " the Contractor which expression shall Include its successors and assigns planners for the time being and from time to time) on the terms and conditions mentioned in the contract.
2. One of the terms of the Agreement is that the Employer shall be entitled to deduct and keep in deposit with them a sum equivalent to 5 % of the Running Bills submitted or to be submitted by the Contractors in connection with the said construction work subject to a maximum of Rs. (Rupees only) In the manner provided in the said Agreement. It is further provided that the Employer may, inter-alia, at its discretion agree to hold the said deposit partly in cash by deduction as aforesaid and partly by a Bank Guarantee;
3. The Contractors have requested the Employer and the Employer has agreed to deduct from the Running Bills submitted by the Contractors only up to a sum of Rs. --
..... (Rupees only) in the form of a Bank Guarantee instead of deducting the said amount from the Running Bills as aforesaid;
4. The Contractors, who are our constituents, have since requested us to furnish the said Guarantee to the Employer in respect. of the said sum of Rs. ---- (Rupees -----
..... only)



NOW, THEREFORE, THIS LETTER OF GUARANTEE WITNESSETH THAT -

In consideration of the Bankers Institute of Rural Development having agreed at contractor's request not to deduct from the Running Bills submitted or to be submitted by the Contractors further sums towards the Retention / Earnest Money Deposit in terms of the said Agreement dated in excess of Rs----- (Rupees -----only) and also to accept this Guarantee 111 lieu of the remaining sum or sums of Rs. ----- (Rupees ----- --only) to be deducted from the Running Bills submitted or to be submitted by the Contractors towards the Retention Money / Earnest Money Deposit. We, the, hereby unconditionally and irrevocably guarantee unto the Bankers Institute of Rural Development (hereinafter referred to as "the BIRD", which expression shall include its successors and assigns) that in the event of the BIRD coming to the conclusion that the Contractors have not performed their obligations under the said Agreement or have committed a breach thereof in particular failed to rectify the defect in the construction/workmanship brought to their notice in terms of the said Agreement which conclusion shall be final and binding on us, WE shall on demand and without demur pay to the BIRD the sum of Rs.----- (Rupees ----- only) or any lower amount that may be demanded by the BIRD and our this guarantee shall be treated as equal to the Retention Money/Earnest Money Deposit kept with the BIRD for the due performance of the aforesaid obligations of the Contractors under the said Agreement.

2. We, the, also agree and confirm that the sum not exceeding Rs.... (Rupees only) as indicated in the written demand issued by the BIRD shall be final and binding on us and we shall not ask for any further proof or evidence and we shall not question the same either inside or outside in any Court, Tribunal or Arbitration, etc.; and that we will make the payment pursuant to the demand notice issued by BIRD without reference to the Contractors and notwithstanding any dispute or difference that may exist or arise between the BIRD and the Contractors or any other person; and that this guarantee shall be a continuing guarantee and shall not be revoked by us without prior consent in writing of the BIRD ;

3. We hereby further agree that:

a. any neglect or forbearance, act or omission on the part of the BIRD in enforcing any of this conditions of the contract or granting of any time or the showing of any indulgence by the BIRD to the Contractors in respect of the completion of the building or any other matter in connection therewith or any variation in the terms of the said contract made by mutual agreement between the BIRD and the Contractors or any other act or deed on the pan of the BIRD, which, but for this Clause, may have the effect of discharging the guarantor under the Law of Sureties, shall not discharge us in any way and our obligation under this guarantee shall be discharged only by payment in full of the sums guaranteed hereunder ;

b. it shall not be necessary for the BIRD to exhaust its remedies against the Contractors before invoking this guarantee and the guarantee herein contained shall be forceable notwithstanding that any other security, which the BIRD may have obtained or may obtain from the Contractors, is outstanding and unrealised;



The stamp is circular with the text "Bankers Institute of Rural Development" around the perimeter and "Lucknow" in the center. A blue ink signature is written across the stamp.

c. our liability under this guarantee shall not be affected by any infirmity or irregularity on the part of the Contractors in entering into the said contract or by the dissolution or change in the constitution or name of the Contractors;

d. our liability under this guarantee shall not exceed the sum of Rs. -----
(Rupees.....only) mentioned above

4. This guarantee shall remain in force up to provided that if so desired by the BIRD, this guarantee shall be renewed by us for a further period as may be indicated by the BIRD on the same terms and conditions as contained herein but at the cost of the Contractors, failing which the amount guaranteed hereunder shall become payable to the BIRD on demand.

5. Our liability under this guarantee will terminate on the aforesaid date, unless renewed as provide hereinabove, or on the day when the Contractors comply with the obligations under the said Agreement, in particular that relating to the rectification of defects in the construction or workmanship during the period of defects liability as provided in the with Agreement (as to which a certification In writing by the BIRD alone shall be conclusive proof), whichever date Is earlier. Unless a claim or suit or action Is filed against us within 6 months from the date aforesaid or the extended period of this guarantee, all the rights of the BIRD against us under this guarantee shall stand forfeited and we shall be released and discharged from all our obligation and liabilities hereunder.

Yours faithfully,

N.B: This guarantee will require stamp duty as applicable in the State, where it is executed and shall be signed by the official whose signature and authority shall be verified.

SIGNED AND DELIVERED
(For & on behalf of the above-named Bank)

For & on behalf of
(Bank's Name & Seal)

Branch Manager
(Bank's Seal)

Bank Address _____



Clarifications and answers as per queries sought by the contractors in the pre-bid meeting dated 22 December 2022

Sr. No.	Pre-Bid Query	Clarification from BIRD
1	Integrity pact should be notarized or not.	Notarization is not required.
2	Centralized remote controller is not mentioned in the BOQ however it is mentioned in the technical specification.	Refer Corrigendum
3	4/6 rows AHU cooling coil is mentioned in the BOQ. Please clarify how many rows to be considered while quoting 4 row OR 6 row OR confirm coil TR.	Refer Corrigendum
4	Makes are not mentioned in the approved make list i.e. Pre Fabricated Duct/ Cable Tray	Refer Corrigendum
5	In the BOQ 2 core copper armoured cables of 70/50/25 sqmm size are mentioned. Please clarify where it will be used.	Refer Corrigendum
6	In the tender it is mentioned that tender will be evaluated based on 9 years CAMC however in the BOQ only CAMC rate of 5 years (after 1 year DLP) are to be quoted. Kindly clarify that how many years of CAMC is required and modify the BOQ accordingly.	Refer Corrigendum
7	Operation team cost to be included while quoting.	Refer Corrigendum
8	As per tender, computer generated reports of the VRV system for a duration of one hour indicating temperature, pressure, voltage, power consumed etc is to be submitted. However, computer generated reports can not indicate few parameters such as power consumption.	Report to be submitted as per requirement of BIRD & as specified in the tender document which can be software generated or manually prepared
9	Bar chart is to submitted along with the tender OR prior to the commencement of work.	Successful Tendered to submit the bar chart after award of work
10	As mentioned in the tender, exposed copper piping is to be laid on a cable tray & covered with UV protection coating.	Exposed Copper piping is not to be used in the project



11	Consideration of buy back items.	Refer Corrigendum
12	As per tender, compressor should be of OEM make. However, out of approved VRV OEMs only 1 OR 2 make manufacture their own compressor and rest major OEMs of the approved list does not comply with the same and are using third party compressor.	Refer Corrigendum
13	CAMC renewal formula is mentioned in the tender, kindly clarify where and how it will be used.	The formula will be used only for calculating the AMC cost after end of first year of DLP. The rates quoted in the BoQ have to NPV of the next 9 years after DLP. These rates will only be used calculate L1 and AMC rates for each year would be calculated based on IEEMA formula
14	Various documents are asked in the tender which is duplicating and not clear.	Documents as asked in the tender to be submitted with the bid
15	According to Tender Document it is clearly mentioned that Tenderer should quote rate by considering CAMC rate for ten years but in BOQ only five years CAMC work is enclosed therefore please clarify our point i.e. where we can quote Rest Five Years CAMC Rate	Refer Corrigendum
16	We have total 88 Indoor (IDU) units (22 AHU+ 66 Hi wall) as per BOQ but According to Electrical Panel of BOQ total IDU Outgoings are 72 therefore please clarify our point regarding balance IDU outgoing	No change
17	We have seen that in Electrical Panel 4 HP, 6 HP, 8 HP Outdoor (ODU) Units is taken but in VRV/VRF Equipments there is no such HP ODU therefore please clarify our points regarding total ODU Outgoing, total ODU Capacity, Quantity, IDU Outgoing & IDU Capacity, Quantity	Refer Corrigendum
18	According to BOQ Quantity of many pipes is taken 1 RM (like 6.4 mm dia. is 1 RM, 15.86 mm dia. is 1 RM. Etc) and according to VRV/VRF Equipment all pipes need to be installed with a very high quantity, therefore please clarify that how above work Can be complete with only 1 RM quantity of pipe	Refer Corrigendum
19	According to BOQ Cable tray is written as perforated painted but in technical	No Change



	specification it is clearly mentioned that exposed cable tray should be "Hot Dipped" therefore please clarify this point cable tray should be GI Perforated or Hot Dipped.	
20	According to tender documents additional BOQ is given as per page no. 138 of 153 of Tender Document, same is already written in BOQ therefore please clarify whether rate should be quoted in additional BOQ or in combined BOQ.	Page Number 137-138 of tender stands removed
21	Specification- Cable Tray exposed to the atmosphere shall be hot dip galvanized.	No Changes
22	Copper pipe details and quantity	Refer Corrigendum
23	Electrical Panels Details	No changes
24	Advance payment	Payment terms to be as per tender document only
25	Compressor of OEM make	Refer Corrigendum



Bill of Quantities – Office Area

GENERAL NOTES:	
1	The rate for each item of work included in the Schedule of Quantities shall, unless expressly stated otherwise, include cost of :
a	All materials, fixing materials, accessories, appliances tools, plants, equipment, transport, labour and incidentals required in preparation for and in the full and entire execution, testing, balancing, commissioning and completion of work called for in the item and as per Specifications and Drawings.
b	Wastage on materials and labour.
c	Loading, transporting, unloading, handling/double handling, hoisting to all levels, setting, fitting and fixing in position, protecting, disposal of debris and all other labour necessary in and for the full and entire execution and for the job in accordance with the contract documents, good practice and recognize principles.
d.	Liabilities, obligations and risks arising out of Conditions of Contract.
e	The unit rate for all equipment or materials in Indian Rupees shall include cost of equipment and materials including all taxes and duties and also including forwarding, freight, insurance and transport into Contractor's store at site, storage, installation, testing, balancing, commissioning and other works required.
2	The contractor shall perform Nitrogen test and vacuum test on refrigerant piping. Start and stop timing & pressure maintained shall be checked and the readings recorded shall be counter signed by consultant / client's representative.
3	The contractor shall submit computer generated reports of the VRF system for a duration of one hour indicating pressures, temperatures, voltage, power consumed, etc
4	Cable glands shall be compression type, heavy-duty chromium plated.
5	All cable termination to have lugs/ thimbles.
6	INSTRUCTION / MAINTENANCE MANUAL
	The Contractor shall prepare and produce instruction, operation and maintenance manuals in English for the use, operation and the maintenance of the supplied equipment and installations and submit to the Client / Consultant in (3) copies at the time of handing over. The manual shall generally consist of the following:
i	Description of the project.
ii	Operating instructions.
iii	Maintenance instructions including procedures for preventive maintenance.
vi	Schematic & control wiring diagrams.
vii	Commissioning Certificate.
7	MAINTENANCE OF PLANT AND TRAINING OF PERSONNEL
	The Contractor shall arrange to provide, at no extra cost, necessary personnel and material to carry out all routine maintenance of the AC equipment as required regularly.



Sl.No	DESCRIPTION	QTY	Unit	RATE (INR)	AMOUNT (INR)
1	Supply, Installation, Testing and Commissioning of modular type outdoor units equipped with highly efficient scroll/rotary compressors all inverter compressor(s) , special heat exchanger (anti- corrosion fin factory coated),Y branch as required, outdoor unit support, auto check function for the connection error, auto addressing setting, and capacity as mentioned below. Outer casing of the Out Door Unit should be factory coated with rust prevention coating. Compressor complying with specifications as indicated in the tender. The VRV/VRF. VRV/VRF system shall be suitable for working on 50°C ambient temperature . The ODU shall be complete with Micro-processor control panel, sub cooler, accumulator, isolating valves (service valves) and all the necessary accessories for proper functioning of the units.				
a	The scope/price will include lubricating oil & Refrigerant R-410 A. including top up if required.				
b	The prices should include lifting, shifting and positioning of units at Site.				
c	The scope shall include electrical isolators suitable for outdoor application on suitable stand next to each outdoor unit.				
d.	The COP of system should be more than 3.1 at 100% Load & IEER not less than 6.5.(100% combination ration) at 35°C DBT ambient temperature & at 27°C DBT/19°C WBT inside temperature (AHRI testing Condition should be followed for 100% Load COP test result). Units should be Heat pump model.				



e	ODU installation to done as per Manufacturer recommendation with all installation requirements i.e Foundation, Vibration Isolator etc as recommended by Manufacturer. ODU installation is included in ODU price.				
f	The Contractor/OEM will arrange the inspection and COP and Ambient Testing of units at NABL certified Laboratory without any extra cost to the Consultant.				
1.1	ODU Capacities (HP) are as under				
i	12	4	Nos.		-
ii	14	3	Nos.		-
ii	16	1	Nos.		-
ii	18	1	Nos.		-
iv	20	3	Nos.		-
v	24	5	Nos.		-
vi	30	3	Nos.		-
vii	32	1	Nos.		-
viii	36	3	Nos.		-
ix	42	1	Nos.		-
x	50	4	Nos.		-
2.1	Supply, installation,testing and commissioning of factory built/site assembled Eurovent Certified/BIS Certified with equiavlent leakage class Air handling units in Double skin type (Casing shall be of Non-Skeleton construction)with 40 +/- 5 thick panels with thermal break construction consisting of G.I casing of thickness 0.6 mm outside layer and 0.6 mm inside layer with 275 GSM or eqvalnet zinc coating and polyurethene foam(PUF) insulation having density of 42 kg/m3, complete with Backward curved aerofoil blade Plug type direct driven fan of Aerofoil design blade along with VFD suitable for static pressure as				



detailed below, DX cooling coil with aluminium finned copper tubes. Filter section should be having MERV13 or Higher, UV lamps(UL certified),IE3 motor suitable for 415 +10% volts,50 Hz, 3 phase AC supply,drain connections with stainless steel drain pan and necessary vibration isolation arrangement to avoid any vibration etc. complete as per specifications and drawings. AHU Construction should meet Mechanical performance of AHU casing as tested in Eurovent accredited laboratory as per EN1886 and meet the following characteristics: Mechanical Strength: D1, Thermal Bridging: TB2, Thermal Transmittance: T2,Air leakage:L1 and Filter by pass: F9 or Higher Characteristics. The said mechanical performance should be meet by each AHU as mentioned below. The External Static pressure should be 25-30 mm and should be verified as per actual site conditions. Mist elimintaor should be part of AHU. The dimension of AHU to be approved by Consultant. VFD should be capable to controll the speed of the fan and compatible with BMS integration for Fan speed control. ESP as defined or as approved. All accessory should be considered for the proper functioning. Cooling coils hould be 4/6 row as approved.The VFD shall be suitable for atleast 1 PIDs (Temp).The scope shall include the Starter Panel ,controller, field devices and wiring.Starter Panel should be built in AHU VFD should be alleast IP-20, suitable for input Voltage of 380 Vac to 480 Vac + 10% to -15% with inputs frequency of 50Hz +/- 5%. Overload shall be 120% for 60 Sec & VFD Shall be rated at 50DegC. Pressure and Humidity sensor should be included. By Pass Provision should be provided in Starter Panel with Star Delta Combination as required or Design by OEM. VFD should be with weather proof enclosure. Fire Dampers sould be integrated with AHU Panel and Fire Panel for application in Fire Case.

1

2500 (4 Row)

1

Nos.

-



ii	3000 (6 Row)	11	Nos.	-
iii	5000 (6 Row)	1	Nos.	-
iv	8000 (6 Row)	1	Nos.	-
v	10000 (6 Row)	4	Nos.	-
vi	14000 (6 Row)	4	Nos.	-
2.1.1	Dismantling of OLD AHU from AHU Room and scrapping as required.			
i	2500	1	Nos.	-
ii	3000	11	Nos.	-
iii	5000	1	Nos.	-
iv	8000	1	Nos.	-
v	10000	4	Nos.	-
vi	14000	4	Nos.	-
2.1.2	Supply, Installation, Testing and commissioning of AHU kit (Expansion kits , Control kits & Corded remote in AHU room) as required to connect the indoor units complete etc is required.	22	Nos.	-
2.1.3	Supply, Installation, Testing Balancing & Commissioning of G.S.S rectangular/round ducting including plenum as required as per IS 655 - 2006 complete with gaskets, elbows, splitters, vanes, supports adjustable dampers, etc. as per approved drawings.(Factory Fabricated)The price shall include necessary scaffolding required for working at required height.			
	Hot dipped Galvanised with 120GSM Zinc coating			
i	Thickness 0.80mm Sheet	300	Sq.m	-
ii	Thickness 0.63mm Sheet	300	Sq.m	-



2.1.4	Supplying, Fixing,testing and commissioning of fire dampers in supply air duct/ main branch and return air path as and where required of required sizes i/c control wiring,the damper shall be motorized and spring return so as to close the damper in the event of power failure automatically and open the same in case of power being restored. The spring return action shall be inbuilt mechanism and not externally mounted. The damper shall also be closed in the event of fire signal complete as required and as per CPWD specifications.	10	sq.m		-
2.1.5	Supply and fixing of 25 mm thickness duly laminated aluminium foil of mat finish closed cell Nitrile rubber (Class O) insulation on the existing duct after applying suitable adhesive for Nitrile Rubber. The joint shall ne sealed with 50 mm wide and 3 mm thick self adhesive nitrile rubber tape insulation complete as per specification and as required.	600	sq.m		-
2.1.6	Supply and fixing of acoustic lining of supply air duct and plenum with 15 mm thick Supply and Application of Acoustic Insulation with Engineered Nitrile Rubber open cell foam with Density 140 - 180 Kg/m ³ passing Class 1 Fire Performance test as per BS 476 Part 7, Air Erosion test for 10,000 fpm air velocity as per ASTM C 1071-05 and with built-in antimicrobial protection. The material should pass Fungi Resistance Test as per DIN EN ISO 846 Method A and Bacterial Resistance Test as per DIN EN ISO 846 Method C; to be applied using manufacturer's recommended Rubber based Adhesive in a blend of solvents.	300	sq.m		-
2.1.7	Supply and fixing of Flexible connection Duct.	10	sq.m		-



2.2	Supply, Installation, testing and commissioning of following minimum capacity VRV/VRF High Wall Indoor/Cassette equipped with washable synthetic media pre- filter, fan selection with suitable static fan/dynamically balanced blower,multi speed motor, coil selection with DX coil, Electronic Expansion valve,outer cabinet, drain pan, drain pump,insulation, pipe connection etc.,suitable for operation on 230 V \pm 10%, 50 Hz, single phase AC supply, complete as required.The unit shall have automtaic forece shut down provision in case of fire on receiving the signal from BMS System. The Cooling capacity of Indoor Unit will be at Air Inlet conidition of at 27°C DBT/19°C WBT inside temperature and othe specification as mentioned in drawings/specification. The IDU Unit Should be with wireless remote.				
2.2	IDU Capacities are as under:				
2.2.1	High Wall				
i	1.5 Tr	66	Nos.		-
2.3	Supplying, installation, testing and commissioning of Split AC machine (Inverter type, Cooling and Heating system) of BEE star rating(Latest) 5 having cooling capacity not less than 6000 watts, heating capacity not less than 6500 watts, rated air flow not less than 18.0 m ³ /min, copper condenser with rotary type compressor, LCD remote control, complete with IDU & ODU and 2 mtrs. long insulated copper tubes with outdoor unit wall mounting bracket, 20 mm dia PVC drain pipe i/c connection etc. as required.				
2.3.1	High Wall				
i	1.5 Tr	46	Nos.		-



2.4	ODU IDU Combination of below Capacities dismantling from Office Area and Shifting to Hostel Area and Refilling of Gas and Installation to Hostel Area as under:				
2.2.1	High Wall				
i	1.5 Tr	25	Nos.		-
3.1	Supply, Installation, Testing and commissioning including vaccumiazation and Nitrogen testing of the following nominal sizes soft/hard drawn copper refrigerant piping for VRV/VRF system for Refrigerant R 410 ,complete with fittings with suitable adjustable ring type hanger supports, joining/brazing includes accessories, insulated with XPLE Class- O tubular insulation/ with Class) closed cell elastometric nitrile rubber tubler sleeves of specified thickness as given below for Suction and Liquid lines, all accessories as per specification etc as required/approved by consultant. The cost should also include the core's to be made for piping and sealing the core cuts to airtight joints.				
i	9.5 mm (OD)(Soft Drawn) with tube thickness 1.2 mm with 19 mm thick insulation.	3,000	RM		-
ii	12.7 mm (OD)(Soft Drawn) with tube thickness 1.2 mm with 19 mm thick insulation.	2,000	RM		-
iii	19 mm (OD)(Hard Drawn) with tube thickness 1.2 mm with 19 mm thick insulation.	1,000	RM		-
iv	28.58 mm (OD)(Hard Drawn) with tube thickness 1.2 mm with 19 mm thick insulation.	1,000	RM		-



V	34.9 mm (OD)(Hard Drawn) with tube thickness 1.2 mm with 19 mm thick insulation.	700	RM	-
Vi	41.27 mm (OD)(Hard Drawn) with tube thickness 1.2 mm with 19 mm thick insulation.	700	RM	-
3.2	Supply,Installation, Testing and commissioning of refrigerant piping Y joints set as required to connect the indoor units complete etc is required.	59	Nos.	-
4	Supply,Installation, Testing and commissioning of PVC (minimum 15kg/sqcm pressure rated) drain water piping complete with fittings(elbows,tees, reducers,sockets,u trap etc.) supports, jointing dult insulated with XLPE class O tubular insulation and any other item required to make the system complete. Nominal diameters of pipe in mms as inducated below:			
i	25 mm dia pipe, Insulation thickness -9 mm	1,000	mts	-
ii	32 mm dia pipe, Insulation thickness -9 mm	500	mts	-
iii	40 mm dia pipe, Insulation thickness -9 mm	300	mts	-
5	Supplying and installing following size of perforated painted with powder coating M.S. cable trays with perforation not more than 17.5%, in convenient sections, joined with connectors, suspended from the ceiling/Ground/wall with M.S. suspenders including bolts & nuts, painting suspenders etc. as required			
i	300 mm width X 50 mm depth X 1.6 mm thickness	8,406	mts	-



6	The plant supports shall consist of a galvanised steel frame supported by adjustable leg and feet assemblies. The frame dimensions should be designed to take the weight with minimal deflection, and should be manufactured from hot dip galvanized carbon steel: BS EN 10219-1 to a welding standard: BS EN ISO 15614. The galvanizing standard to be BS EN ISO 1461 with salt mist testing to BS EN 60068-2-52. The feet shall be 150mm square made from Nylon 6 B601L 30% glass fibre filled. Bound using a ratio of high-quality moisture curing polyurethane pre-polymer to BS 7188 and BS 5696-3. The leg assembly is fixed at minimum 300.mm. Load bearing strength should be not less than 500/600 kg/stand. Third party certification should be provided for Load bearing strength or AS OEM Approved.				
i	Minimum Dimension. (L * W*H) (930 mm * 765 mm*250 mm)	4	Nos.		-
ii	Minimum Dimension. (L * W) (1200 mm * 765 mm*250 mm)	17	Nos.		-
iii	Minimum Dimension. (L * W) (1400 mm * 600 mm*250 mm)	6	Nos.		-
7	Electrical distribution Panel				
	Supplying, installation, testing & commissioning of cubical type wall/ Floor mounted Distribution Panel suitable for Outdoor application for 415V, 3 Phase, 4Wire 50 Hz AC supply system fabricated in compartmentalized design from CRCA sheet steel of 2mm thick for frame work and covers, 3 mm thick for gland plates i/c cleaning & finishing complete with 7 tank process for powder coating in approved shade, having Suitable Amp capacity extensible type Copper bus bars of high conductivity, SMC bus bar supports, with short circuit withstand capacity of 50kA with intire panel shall have a common earth bus of suitable size at the rear with 2 Nos earth stud, solid connections				



	from main bus bar to switch gears with required size of Copper bus bars and control wiring with 1.5 sq.mm. PVC insulated FRLS copper conductor Single Core cable, cable alleys, cable gland plates. providing & fixing following switch gears:-				
	Each MCCB shall be with the following.				
i	Extended Rotary Operating Handle, Phase Spreader links and Phase barriers				
ii	1 Set - Digital Ammeter with in built ASS, metering C.T.s "CAST RESIN" type, 15VA, and accuracy class-1of 800/5A for measuring current in each phase				
iii	1 Set - Digital Voltmeter with in built VSS, with 2Amp. Back up MCB				
iv	1 Set - 3 Nos. Phase indication LED lamps with 2Amp back up MCB, Breaker 'ON/OFF' indicating light with 2A MCB, test terminal block set, circuits as per standard practice, auxiliary contacts for positive interlocking of the breakers as required. - 2 Set				
v	1 No. Suitable energy meter				
vi	Each Panel will have Junction box with holes punched for connecting it to existing panel through Cable.				
A	Electrical distribution Panel				
	Supplying, installation, testing & commissioning of cubical type wall / floor mounted Distribution Panel suitable for out door application for 415V, 3 Phase, 4Wire 50 Hz AC supply system fabricated in compartmentalized design from CRCA sheet steel of 2mm thick for frame work and covers, 3 mm thick for gland plates i/c cleaning & finishing complete with 7 tank process for powder coating in approved shade, having Suitable Amp capacity extensible type Copper bus bars of high conductivity, SMC bus bar supports, with short circuit withstand capacity of 35kA for I Sec. with intire panel shall have a common earth bus				



	of suitable size at the rear with 2 Nos earth stud, solid connections from main bus bar to switch gears with required size of Copper bus bars and control wiring with 1.5 sq.mm. PVC insulated FRLS copper conductor Single Core cable, cable alleys, cable gland plates. providing & fixing following switch gears:-				
	Each MCCB shall be with the following.				
i	Extended Rotary Operating Handle, Phase Spreader links and Phase barriers				
ii	1 Set - Digital Ammeter with in built ASS, metering C.T.s "CAST RESIN" type, 15VA, and accuracy class-1of 800/5A for measuring current in each phase				
iii	1 Set - Digital Voltmeter with in built VSS, with 2Amp. Back up MCB				
iv	1 Set - 3 Nos. Phase indication LED lamps with 2Amp back up MCB, Breaker 'ON/OFF' indicating light with 2A MCB, test terminal block set, circuits as per standard practice, auxiliary contacts for positive interlocking of the breakers as required. - 2 Set				
7.1	Panel A				
I	Incomer				
A	1 No. - 400 Amps Four Pole, 36 KA (ICU=ICS) for 1 sec, MCCB with Thermal Magnetic release with O/C, S/C & E/F protection release,				
II	Bus Bar:-				
	TPN Copper extensible type main bus bars of minimum of 500 A capacity (As per capacity of corresponding incoming / Bus couplers) , and auxilliary bus bars of suitable capacity with heat shrunk coloured sleeves and i/c SMC bus bars supports at required intervals complete for				



	cross section, size supports & their spacing etc. for withstanding fault level of 35kA for 1 Sec.				
III	Outgoings				
	Supplying and fixing following outgoing complete connection, inter-connection etc. as required.				
a)	1 Nos. - 80Amp, 10KA, TPN EL+ MCB for for ODUs of (3 each for 5th, 4th & 2nd Floor) & (2 for GF)				
b)	4 Nos. - 40 Amp, 10KA, TPN EL+MCB for ODUs				
c)	4 Nos. - 16 Amp, 10KA, SPN EL+MCB for ODU	4	Set		-
d)	4 Nos. - 10 Amp, 10KA, SPN EL+MCB for IDU 's				
e)	4 Nos. - 20 Amp, 10KA, SPN EL+MCB for IDU 's				
f)	1 Nos. - 30 Amp, 10KA, SPN EL+MCB for IDU 's				
7.2	Panel B				
I	Incomer				
A	1 No. - 400 Amps Four Pole, 36 KA (ICU=ICS) for 1 sec, MCCB with Thermal Magnetic release with O/C, S/C & E/F protection release.				
II	<u>Bus Bar:-</u>				
	TPN Copper extensible type main bus bars of minimum of 500 A capacity (As per capacity of corresponding incoming / Bus couplers) , and auxilliary bus bars of suitable capacity with heat shrunk coloured sleeves and i/c SMC bus bars supports at required intervals complete for cross section, size supports & their spacing etc. for withstanding fault level of 35kA for 1 Sec.				
III	Outgoings				



	Supplying and fixing following outgoing complete connection, inter-connection etc. as required.				
a)	2 Nos. - 80Amp, 10KA, TPN EL+ MCB for				
b)	2 Nos. - 63 Amp, 10KA, TPN EL+MCB for ODUs	4	Set		-
c)	3 Nos. - 40 Amp, 10KA, TPN EL+MCB for ODUs				
e)	1 Nos. - 32 Amp, 10KA, TPN EL+MCB for ODUs				
f)	1 Nos. - 16 Amp, 10KA, SPN EL+MCB for ODU				
g)	1 Nos. - 10 Amp, 10KA, SPN EL+MCB for IDU 's				
h)	4 Nos. - 20 Amp, 10KA, SPN EL+MCB for IDU 's				
i)	4 Nos. - 30 Amp, 10KA, SPN EL+MCB for IDU 's				
8	Supply & Installation of interconnecting control & transmission Copper wiring 2C x 1.5sqmm as communication cable required in PVC conduit.	8,406	RM		-
9	Supply of following XLPE PVC insulated copper conductor armoured cable 650/1100 volts complete with cable tray clamps, saddles, thimble cable gland etc including effective proper connection to the equipment as required.				
i	4C X 6 mm ²	50	RM		-
ii	4C X 10 mm ²	50	RM		-
iii	4C X 16 mm ²	100	RM		-
iv	4C X 25 mm ²	100	RM		-
v	3C X 4 sq.mm (Black, Green & Any Phase Color)	100	RM		-
vi	3C X 1.5 sq.mm (Black, Green & Any Phase Color)	8,406	RM		-



vii	2C X 6 mm ²	50	RM		-
viii	2C X 10 mm ²	50	RM		-
ix	2C X 16 mm ²	100	RM		-
x	2C X 25 mm ²	100	RM		-
xi	4C X 50 mm ²	1000	RM		-
xii	4C X 70 mm ²	1000	RM		-
11	EARTHING & MISCELLANEOUS ITEM				
11.1	Earthing complete with galvanised steel earth plate electrode 60×60cm.× 6mm thick, buried directly in ground (earth pit not less than 2.25 metres deep below ground level) with top edge of the plate not less than 1.5 metres below normal ground level, connected to galvanised earth lead wire but using galvanised iron strip 32×6mm as earthing lead	10	Set		-
12	Dismantling and buying back				
1.1	Dismantling and buying back (including lifting shifting & transportation) of following items including legal disposal of the debris.				
i	chiller 4 x125TR	1	Lot		-
ii	Pump 4 Nos	1	Lot		-
iii	Cooling tower 4 Nos	1	Lot		-
iv	Piping	1	Lot		-
v	Electrical panel	1	Lot		-
vi	Stater panel	1	Lot		-
vii	Cable	1	Lot		-



viii	Hot water Generator	1	Lot		-
ix	Open type exp tank	1	Lot		-
x	Old AHUs (22Nos)	1	lot		
	BUY BACK - The amount will be in negative, to be deducted from the Grand total, The contractor will give credit.				
	GRAND TOTAL A (Minus Buy Back)				-
	GRAND TOTAL A with @ 5% Contingency.				-
13	AMC				
	Annual Compressive routine operation (including 3 operator per Shift & 2 shifts per day) and preventive maintenance comprising of VRF unit i/c all accessories, consumable like oil, gas, PCB's & other item to keep the system in perfect running condition as required for the following periods after defect liability period of 1 year after successfully commissioning and handing over .				
i	1st Year after expiry of 1 year warranty period (PV)	776	HP		-
ii	2nd Year after expiry of 1 year warranty period (PV)	776	HP		-
iii	3rd Year after expiry of 1 year warranty period (PV)	776	HP		-
iv	4th Year after expiry of 1 year warranty period (PV)	776	HP		-
v	5th Year after expiry of 1 year warranty period (PV)	776	HP		-
vi	6th Year after expiry of 1 year warranty period (PV)	776	HP		-
vii	7th Year after expiry of 1 year warranty period (PV)	776	HP		-
viii	8th Year after expiry of 1 year warranty period (PV)	776	HP		-
ix	9th Year after expiry of 1 year warranty period (PV)	776	HP		-



x	10th Year after expiry of 1 year warranty period (PV)	776	HP		
	Note: The cost of min 3 operator per Shift & for 2 shifts per day for defect liability period should be inbuilt in quoted rates.				
	GRAND TOTAL B				-
	GRAND TOTAL A+B (In numbers) (Rate to be inclusive of all taxes including applicable GST)				-
	GRAND TOTAL A+B (In Words) (Rate to be inclusive of all taxes including applicable GST)				

