

BILL OF QUANTITIES FOR AIR CONDITIONING AND MECHANICAL VENTILATION SYSTEM FOR URVA MUSEUM

| SLNO | DESCRIPTION | UNIT | QTY | RATE | AMOUNT |
|------------|---|------------|----------|------|--------|
| 1.0 | VRV/VRF AIR CONDITIONING OUTDOOR UNIT Supply, Leading to the site, Installation, Testing and Commissioning of the following VRV/VRF Air conditioning System with Outdoor Unit comprising VRV Outdoor Units with R410A Refrigerant Including first filling including adequate supporting hardware, Masonry Foundations, Base Frame, Vibration dampers, Power connections, Pipe connections, drain connections, shut off valves etc. The Outdoor Units shall be factory treated using <u>Anti-corrosive Hydrophilic Coating</u> . High Voltage Cutoff System with Start time Delay, with necessary refrut joints etc. The scope shall also include Supply, Installation, wiring and programming of microprocessor based Controller / Control panel with communications capability | | | | |
| 1.1 | Modular type outdoor units equipped with minimum 1no of high efficiency DC twin rotary compressor(s) with Inverter and Single / Multiple fixed Scroll compressors – 26HP Capacity | NOS | 1 | | |
| 2.0 | VRF AIR CONDITIONING INDOOR UNIT Supply, Leading to the site, Installation, Testing and Commissioning of the following Ceiling Suspended Air conditioning Units comprising of Indoor Units of Adequate Static Pressure as required, with drain pump, including supporting hardware, control relay. Supply, Wiring and Installation of Temperature Sensors etc. complete, excluding refrigerant piping and control cabling which is considered separate. | | | | |
| 2.1 | 1.5 TR 1-WAY CASSETTE Indoor Unit (Model: Panosonic S-56MD1E5 or approved equivalent) Supply: Labour / Installation / Erection: | NOS NOS | 1 1 | | |
| 2.2 | 1.5 TR Finished CEILING MOUNTED Indoor Unit (Model: Panosonic S-56MT2E5A or approved equivalent) Supply: Labour / Installation / Erection: | NOS NOS | 3 3 | | |
| 2.3 | 3 TR Finished CEILING MOUNTED Indoor Unit (Model: Panosonic S-106MT2E5A or approved equivalent) Supply: Labour / Installation / Erection: | NOS NOS | 5 5 | | |
| 2.4 | 4 TR Finished CEILING MOUNTED Indoor Unit (Model: Panosonic S-140MT2E5A or approved equivalent) Supply: Labour / Installation / Erection: | NOS NOS | 1 1 | | |
| 2.5 | Wireless Remote Control and IR reciever Supply: Labour / Installation / Erection: | NOS NOS | 10 10 | | |
| 2.6 | REFRIGERANT R410 A Supply: Labour / Installation / Erection: | KG KG | UR UR | | |
| 3.0 | REFRIGERANT PIPING Supply, Installation, testing and Commissioning of hard drawn copper refrigerent piping insulated with <u>gas side 13 mm and liquid side 19 mm nitrile rubber tubing with 45-60kg/cu.mtrs density</u> and joints sealed with black cotton tape supporting at necessary intervals of the following diameters and also include u clamps [The piping quantities are tentative and the total cost quoted shall be suitable for Site layout, Unit Locations and Installation requirements] | | | | |

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| SLNO | DESCRIPTION | UNIT | QTY | RATE | AMOUNT |
|------------|---|------|-----|------|--------|
| 3.01 | 6.4 mm Dia Liquid Line | | | | |
| | Supply: | RMT | 20 | | |
| | Labour / Installation / Erection: | RMT | 20 | | |
| 3.02 | 9.5 mm Dia Liquid Line | | | | |
| | Supply: | RMT | 35 | | |
| | Labour / Installation / Erection: | RMT | 35 | | |
| 3.03 | 12.70 mm Dia Liquid Line | | | | |
| | Supply: | RMT | 5 | | |
| | Labour / Installation / Erection: | RMT | 5 | | |
| 3.04 | 15.9 mm Dia Liquid Line | | | | |
| | Supply: | RMT | 10 | | |
| | Labour / Installation / Erection: | RMT | 10 | | |
| 3.05 | 19.5 mm Dia Liquid Line | | | | |
| | Supply: | RMT | 10 | | |
| | Labour / Installation / Erection: | RMT | 10 | | |
| 3.06 | 12.70 mm Dia Gas line | | | | |
| | Supply: | RMT | 20 | | |
| | Labour / Installation / Erection: | RMT | 20 | | |
| 3.07 | 15.88 mm Dia Gas line | | | | |
| | Supply: | RMT | 30 | | |
| | Labour / Installation / Erection: | RMT | 30 | | |
| 3.08 | 19.50 mm Dia Gas line | | | | |
| | Supply: | RMT | 10 | | |
| | Labour / Installation / Erection: | RMT | 10 | | |
| 3.09 | 22.22 mm Dia Gas line | | | | |
| | Supply: | RMT | | | |
| | Labour / Installation / Erection: | RMT | | | |
| 3.10 | 25.40 mm Dia Gas line | | | | |
| | Supply: | RMT | 5 | | |
| | Labour / Installation / Erection: | RMT | 5 | | |
| 3.11 | 28.58 mm Dia Gas line | | | | |
| | Supply: | RMT | 10 | | |
| | Labour / Installation / Erection: | RMT | 10 | | |
| 3.12 | 31.75 mm Dia Gas line | | | | |
| | Supply: | RMT | 10 | | |
| | Labour / Installation / Erection: | RMT | 10 | | |
| 3.13 | 38.10 mm Dia Gas line | | | | |
| | Supply: | RMT | UR | | |
| | Labour / Installation / Erection: | RMT | UR | | |
| 3.14 | Supply and Installation of REFNET JOINT Kits as per manufacturers recommended standards (For all sizes) | | | | |
| | Supply: | NOS | 9 | | |
| | Labour / Installation / Erection: | NOS | 9 | | |
| 4.0 | CONTROL CABLING | | | | |
| 4.1 | 2 Core 1.25 sqmm PVC Insulated flexible control cable with saddles / supports and PVC conduits to connect outdoor unit with Indoor unit | | | | |

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| SLNO | DESCRIPTION | UNIT | QTY | RATE | AMOUNT |
|------------|---|------|-----|------|--------|
| | Supply: | RMT | 120 | | |
| | Labour / Installation / Erection: | RMT | 120 | | |
| 4.2 | 2 Core 0.75 sqmm PVC Insulated flexible control cable with Saddles / Supports and PVC conduits to connect Indoor unit with remote control | | | | |
| | Supply: | RMT | UR | | |
| | Labour / Installation / Erection: | RMT | UR | | |
| 5.0 | DRAIN PIPE | | | | |
| | Supply of all materials and Installation of drain pipe between Indoor unit and drain point including U Trap | | | | |
| 5.1 | Drain pipe for condensate drain to the nearest drain point with 25mm uPVC pipe insulated using 10mm thick Nitrile Rubber tubing as per Client/Engineers instruction. | | | | |
| | Supply: | RMT | 30 | | |
| | Labour / Installation / Erection: | RMT | 30 | | |
| 5.2 | Drain pipe for condensate drain to the nearest drain point with 32mm uPVC pipe insulated using 10mm thick Nitrile Rubber tubing as per Client/Engineers instruction. | | | | |
| | Supply: | RMT | 30 | | |
| | Labour / Installation / Erection: | RMT | 30 | | |
| 5.3 | Drain pipe for condensate drain to the nearest drain point with 50mm uPVC pipe insulated using 10mm thick Nitrile Rubber tubing as per Client/Engineers instruction. | | | | |
| | Supply: | RMT | 20 | | |
| | Labour / Installation / Erection: | RMT | 20 | | |
| 6.0 | PIPE SUPPORTS AND STRUCTURALS | | | | |
| | Supply, Installing and Leveling Pipe Supports Fabricated from GI Slotted Rails / Channels suitable for carrying the operating weight of pipe and the fluids, 8mm Dia GI Adjustable Threaded Rods and Anchor Fasteners on Concrete Roof etc. | | | | |
| 6.1 | 150mm Width Single Layer | | | | |
| | Supply | NOS | 110 | | |
| | Labour/Installation | NOS | 110 | | |
| 6.2 | 300mm Width Single Layer | | | | |
| | Supply | NOS | UR | | |
| | Labour/Installation | NOS | UR | | |
| 7.0 | TOILET EXHAUST SYSTEM SHEET METAL DUCT WORK | | | | |
| | Supply, Fabrication, Leading to site and Installation of Galvanized Sheet Steel Rectangular Ducting as per the requirements complete with all fittings such as Reducers, Tee bends, takeoffs, suspension, Ducts etc .Complete as required | | | | |
| 7.1 | GSS Ducting 24SWG (i.e 0.63mm thick) | | | | |
| | Supply: | SQM | 1 | | |
| | Labour / Installation / Erection: | SQM | 1 | | |
| 7.2 | GSS Ducting 22SWG (i.e 0.8mm thick) | | | | |
| | Supply: | SQM | UR | | |
| | Labour / Installation / Erection: | SQM | UR | | |

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| SLNO | DESCRIPTION | UNIT | QTY | RATE | AMOUNT |
|-------------|--|--------------|------------|------|--------|
| 8.0 | DUCT INSULATION WORKS Supply and fixing of Acoustic insulation for ducting using 15mm thick nitrile foam sheet of 140-180KG/cu.mtr density Supply: Labour / Installation / Erection: | SQM SQM | UR UR | | |
| 9.0 | EXHAUST GRILLES & DIFFUSERS Supply and Installation of Extruded Aluminum Powder Coated Exhaust Diffuser with Volume Control Damper for Toilet Exhaust Supply: Labour / Installation / Erection: | SQM SQM | 0.5 0.5 | | |
| 10.0 | EXHAUST / FRESH AIR COWLS Supply of all materials and installation of Fresh Air Cowls with Bird Screen and grills 600mmx600mm Size (including supports and Supply: Labour / Installation / Erection: | NOS NOS | 1 1 | | |
| 11.0 | TOILET EXHAUST FAN Cabinet type double skin Exhaust air unit , with 25 MM thick Put panel, 0.6 MM Pre coated Outer sheet & 0.6 MM plain inner sheet, complete with Fan section with DIDW centrifugal forward curved fan (with bearings mounted on the scroll and not on the fan casing) Fan motor, Class 'F', IP-55 rated motor , belt driven, drive guard, fan inlet with damper, base frame, spring type /turret mount vibration isolator, powder coated weather-proof canopy, the fan shall be suitable for installation on terrace, complete as per Equipment Schedule & Specification.The fan should be low noise level not exceeding 67 dB(A) at 3 meter distance. | | | | |
| 11.1 | 100 CFM Inline wall mounted Exhaust Fan with 8 mm Static Pressure Supply: Labour / Installation / Erection: | NOS NOS | 1 1 | | |
| 12.0 | ELECTRICAL CABLE Supply,Laying, testing and commissioning of the following PVC Insulated Armoured Aluminium L.T.Cables (AYWY/AYFY) /XLPE (A2XCEFY) H.T Cables through excavated trenches, built up cable trenches, cable trays, hume pipes,including supply and fixing of clamps, nuts and bolts, screws, identification tags, route markers etc. required for clamping intervals as necessary | | | | |
| 12.1 | 1.1KV GRADE AYFY/AYWY ARMOURED ALUMINIUM CABLES a) 4CX 16 SQMM AYFY Supply: Labour / Installation / Erection: | RMT RMT | 5 5 | | |
| 13.0 | L.T.CABLE TERMINATION Supply of all materials and termination of the Armoured Aluminium H.T.Cables (A2XCEFY) , PVC Insulated Armoured Aluminium L.T.Cables (AYWY / AYFY) using single compression type cadmium plated brass cable glands, Coppercrimped type cable lugs, cable identification tags and including gland earthing using copper conductor of adequate size , AL-CU strip for termination of Cables etc. | | | | |
| 13.1 | 1.1KV AYFY/AYWY LT CABLE TERMINATION a) 4CX 16 SQMM AYFY Supply: Labour / Installation / Erection: | NOS. NOS. | 2 2 | | |

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| SLNO | DESCRIPTION | UNIT | QTY | RATE | AMOUNT |
| 14.0 | EARTHING CONDUCTORS. | | | | |
| | Supply,laying & clamping at site Copper earthing conductors inclusive of providing earthing terminations and bracing of the terminations etc. | | | | |
| 14.1 | 8SWG Copper wire. | RMT | 3 | | |
| | Supply: | RMT | 3 | | |
| | Labour / Installation / Erection: | | | | |
| 15.0 | OUTDOOR TYPE ISOLATOR | | | | |
| | Design, fabrication & supply of following dust proof, rust proof, shock proof, water proof, corrosion proof, vermin proof, made of thermoplastic polycarbonate The design should be as per the standards of the CEIG / State Electrical Inspectorate. The Enclosure shall adhere to a minimum protection category of IP 65 as per the following. | | | | |
| 15.1 | 63A TPN MCB Isolator in IP55 Polycarbonate Enclosure | | | | |
| | Supply: | NOS | 1 | | |
| | Labour / Installation / Erection: | NOS | 1 | | |
| | <u>AMC CHARGES</u> | | | | |
| | 2nd year of installation | yrs | 1 | | |
| | 3rd year of installation | yrs | 1 | | |
| | 4th year of installation | yrs | 1 | | |
| GRAND TOTAL (Without AMC) | | | | | |