

**BILL OF QUANTITY (BOQ) FOR HVAC VRF/VRV AIR CONDITIONING WORKS AT ADMINISTRATIVE OFFICE JHANSI.**

Sr. No.	Description	Qty.	Unit	Rate (Basic Value)	Amount (Basic Value)
<b>A</b>	<b>High Side Work</b>				
<b>1.0</b>	<b>Outdoor Units</b>				
	Supply of Air Cooled VRV/VRF units with multiple DC Twin Rotary/Scroll Compressor capable of modulating capacity i.e. it should be able to vary speed of the compressor as per the varying load conditions and works on R410A Heating & Cooling. The outdoor unit shall be a factory assembled unit housed in a sturdy weather proof casing constructed from rust-proofed mild steel panels coated with powder coated finish. Each unit shall be equipped, with an oil separator to ensure stable operation with long refrigerant piping. The Outdoor Units should be fitted with Accumulator, Oil return Cylce. Each outdoor unit should be able to read and write data from outdoor unit directly on smart phone without the need of connecting PC or opening cabinet through Near Field Communication/NFC. The system should be BMS compatible suiting our building interface. The Operating temperature range for the Outdoor units in cooling mode should be in between -5 deg C to 49 Deg C. Sound level in db should not be more than 68 db. Variable refrigerant flow modular type air-conditioning system suitable for Cooling by inverter driven capacity control compressor Outdoor unit having COP at 50% Load to be more than 8.0 at 35 deg. Outside ambient conditions. All the units shall be provided with built-in microprocessor control panel, for automatic operation and capacity control. All compressor shall have inverter technology i.e. outdoor units shall have all inverter based compressor. The manufacturer of ODU and compressor shall be same.				
a	28 HP(14+14) - Heat Pump-Ground and 2nd Floor	2	Nos.		
b	26(14+12) HP - Heat Pump- 1st Floor	1	Nos.		
<b>2.0</b>	<b>Indoor Units</b>				
	Supply of below mentioned Ceiling Suspended Four Way Cassette type air conditioners complete with Metal housing with wired remote Control, factory assembled inbuilt drain pump with 600 mm Vertical Lift, fan and fan motor, interconnecting refrigerant piping with insulation , cabling, earthing etc with necessary galvanized steel supports etc. as per specification and drawing. The Cassette unit should have Individual Louver Control i.e. the angles of each of the four Louvers can be set individually which enables airflow to be adapted to user preferences. The cooling capacity of indoor unit will be at air inlet conditions of 27 Degree C DB and 19 Degree C WB temperature				
a	3.0 TR 4 way Cassette type indoor	11	Nos.		
b	2.0 TR 4 way Cassette type indoor	8	Nos.		
c	1.6 TR 4 way Cassette type indoor	4	Nos.		
d	1.3 TR 4 way Cassette type indoor	2	Nos.		
e	1.0 TR 4 way Cassette type indoor	7	Nos.		
f	1.6 Tr Hi wall type split indoor	1	Nos.		
g	1.0 Tr Hi wall type split indoor	2	Nos.		
<b>3.0</b>	Supply of ceiling suspended energy efficient 4 way air-flow Cooling type single phase 2 Tr, BEE rated 5 Star Cassette type split air conditioner in recessed manner in false ceiling with full function wireless remote and auto restart feature, <b>Copper condenser coils and Copper cooling coils</b> , company provided copper refrigerant, fan and fan motor drain pan and cordless Remote controller pipe complete in all respects with indoor/ outdoor unit, gas charge etc. Acceptable makes of AC:Carrier, Toshiba, Daikin, O General, Hittachi, Mitshubishi	1.00	No		
<b>4.0</b>	Supply of 2.0 Tr hi wall type BEE rated 5 star inverter technology split air conditioner with full function wireless remote and auto restart feature, with indoor/outdoor unit, gas charge, <b>Copper condenser coils and Copper cooling coils</b> company provided copper refrigerant pipe complete in all respects. Acceptable makes AC: Daikin/Toshiba/O General /Carrier/Blue Star/Voltas/Hitachi/Mitsubishi (One each for BM Chamber/ATM)	3	No		
<b>5.0</b>	Supply of 1.5 Tr hi wall type BEE rated 5 star inverter technology split air conditioner with full function wireless remote and auto restart feature, with indoor/outdoor unit, gas charge, <b>Copper condenser coils and Copper cooling coils</b> company provided copper refrigerant pipe complete in all respects. Acceptable makes AC: Daikin/Toshiba/O General /Carrier/Blue Star/Voltas/Hitachi/Mitsubishi (One each for BM Chamber/ATM)	4	Nos.		
<b>TOTAL FOR HIGH SIDE WORK ( A )</b>					
<b>B</b>	<b>Low Side Work</b>				
<b>1</b>	Installation, testing and commissioning of variable refrigerant volume/Variable Refrigerant Flow airconditioning system complete with indoor and outdoor units with individual controller and cooling feature with refrigerant piping, gas charging R-410 as per detail given in specification and dwg. <u>Variable Refrigerant Flow/ System</u>				
	Lifting, shifting, positioning, installation, testing of indoor units, outdoor units, fittings(Imported Y-joints & header etc.) outdoor stand remote controls of indoor units, complete as per specification and drawings.				
<b>1.1</b>	<b>Outdoor Unit including stand and gas charging as per requirement</b>	3	Nos		
<b>1.2</b>	<b>Indoor Units</b>				
a	4-Way Cassettes	32	Nos		
b	Split	3	Nos		
<b>2</b>	Installation, testing and commissioning of 2/ 1.5 TR cassette type split/window air conditioner/ <b>old AC</b> dismantled from branch with wall cutting/ mounting, stabiliser and making good of damages complete in all respects. For old AC dismantling also to be done.	1	Set		

3	Installation, testing and commissioning of 2/ 1.5/ 1 TR Hi wall type split/window air conditioner/ old AC dismantled from branch with wall cutting/ mounting, stabiliser and making good of damages complete in all respects. For old AC dismantling also to be done.	7	Set		
<b>4.0 Refrigerant Piping</b>					
	SITC of Refrigerant piping Interconnecting pipe work with (19mm/13 mm thick) closed cell elastomeric nitrile rubber tubular insulation (including R410a Gas) between each set of indoor & outdoor units as per specifications, all piping inside the room shall be properly supported ( if pipe required to be concealed then chipping/core cutting and repairing with plaster and painting to be done by the vendor)				
a	34.9 mm	80	Rmt		
b	31.8 mm	50	Rmt		
c	28.6 mm	80	Rmt		
d	22.2 mm	30	Rmt		
e	19.1 mm	40	Rmt		
f	15.9 mm	160	Rmt		
g	12.7 mm	50	Rmt		
h	9.5 mm	120	Rmt		
i	6.4 mm	40	Rmt		
5	Supply, installation, testing and commissioning of insulated copper refrigerant piping set (suction and discharge) duly insulated by nitrile rubber for 2/3 TR Cassette AC. Size (thickness and dia) of both Copper pipe should as per recommendation of AC manufacturer's technical specification. (Old pipe dismantled from branch is also to be used) Makes:Totaline/ Met Tube/ Diamond/ Star/ Camipro. ( if pipe required to be concealed then chipping and repairing with plaster and painting to be done by the vendor)- 3rd floor cafeteria.	40	Rmt		
6	Supply, installation, testing and commissioning of insulated copper refrigerant piping set (suction and discharge) duly insulated by nitrile rubber for 2/1.5/1 TR Split AC. Size (thickness and dia) of both Copper pipe should as per recommendation of AC manufacturer's technical specification. (Old pipe dismantled from branch is also to be used) Makes:Totaline/ Met Tube/ Diamond/ Star/ Camipro. ( if pipe required to be concealed then chipping and repairing with plaster and painting to be done by the vendor)	90	Rmt		
<b>7.0 Drain Piping:</b>					
	SITC of UPVC Drain piping for indoor to respective drain point along with 9 mm nitrile rubber insulation. ( if pipe required to be concealed then chipping/core cutting and repairing with plaster and painting to be done by the vendor)				
a	32 mm	160	Rmt.		
b	25 mm	80	Rmt.		
<b>8.0 Control Cabling</b>					
a	Indoor to Outdoor unit Control/communication cable cabling with sheathed Cu cable 2C x 1.5 Sq.mm. For VRV/VRF system in the 19mm medium duty PVC conduit pipe. ( if pipe required to be concealed then chipping//core cutting and repairing with plaster and painting to be done by the vendor)	560	Rmt.		
b	Supply, installation, testing and commissioning of inter connecting wiring/ cabling between indoor and outdoor of Cassette and hi wall type split AC (power supply will be made available at the outdoor or indoor unit as per the site AC requirement, please quote accordingly) (Only single distance will be considered) ( if pipe required to be concealed then chipping//core cutting and repairing with plaster and painting to be done by the vendor)	150	Rmt.		
<b>9.0 Cable Tray</b>					
a	Supply & Laying of Cable Tray 300 mm GI for Copper Pipes & Cables horizontally and vertically along with threaded rod, nut, bolt, saddle, tie etc.	260	Rmt.		
<b>10.0 MS outdoor Stand</b>					
a	Supply & installation of robust MS angle dual coat painted, MS flat fabricated floor/ wall mounting outdoor stand suitable for VRV/VRV system	3	No.		
b	Supply and installation of robust MS angle dual coat painted, MS flat fabricated floor/ wall mounting stand suitable for hi wall split/ cassette outdoor units	8	No.		
11.0	Supply of 5 KVA, wall mounted hi lo cut off stabiliser with TDR, voltage range 140-280V, complete in all respects. Stabilizer: Servel/ V Gaurd/ Marc/Sen & Pandit/ Stambh/ Inmag/Microtek	4.00	Set		
12.0	Supply of 4 KVA, wall mounted hi lo cut off stabiliser with TDR, voltage range 140-280V, complete in all respects. Stabilizer: Servel/ V Gaurd/ Marc/Sen & Pandit/ Stambh/ Inmag/Microtek	4.00	Set		
13.0	Core cutting/ wall/floor chiseling upto 75mm width and 50 mm depth for concealing the copper pipe, drain pipe and conduit either on wall or under floor including making good of damages with plaster, putti and paint.	140.00	Mtr		
<b>TOTAL FOR LOW SIDE WORK ( B )</b>					
<b>GRAND TOTAL ( SITC)</b>					

including GST