

BILL OF QUANTITY OF HVAC WORKS GIMS LABORATORY BUILDING

(First Floor , 2nd & 3rd Floor)

	Supply of following State of Art, Latest Technology , More Energy Saving , Air Cooled , ALL DC VRF equipment / system to be Connected to PHOTOVOLTAIC inverter system with Direct Connectivity with DC & AC power supply complete with standard Components , Controls & Safety Devices to make system Fully Automated.		Qty	Unit	Rate (Rs)	Amount (Rs)
1	INDOOR UNITS					
A	ALL DC VRF DX Indoor A/C units with Electronic Expansion Devices , controls, thermostat and accessories / fittings etc	USRT				
	Decorative 4-way cassette Type					
		1.00	10	No		
		1.25	8	No		
		1.50	4	No		
		2.00	30	No		
		2.50	4	No		
		4.00	10	No		
B	Branch Connectors/Y Joints for Indoor Units					
			10	No		
			25	No		
			22	No		
			10	No		
2	ALL DC VRF Out Door Condensing Units					
A	ALL DC VRF outdoor units (Condensing Units) with Built in 132 KW PHOTOVOLTAIC inverter with Direct Connectivity with DC & AC Power Supply, floor standing, Vertical Discharge with all standard controls, safeties & accessories etc.Suitable for HIGH Ambient Conditions (52 CDB)	USRT				
a	Air-cooled Condensing Unit (First Floor ICU)	11.5	1	No		
b	Air-cooled Condensing Unit (2nd Floor)	38.2	2	No		
c	Air-cooled Condensing Unit (3rd Floor)	28.6	3	No		
B	Branch Connectors/Y Joints		12	No		
3	Supply of Hygienic , EUROVENT Certified , DX-Type ,Double Skin Air Handling Units Complete with Direct Driven PLUG Fan, VFD, Humidifier , DeHumidifier , Ultra Violet Lamps (For OTs AHUs only), High efficiency Air Filters + ENERGY Saving , High Efficiency ALL DC VRF Condensing units including expansion kit & control kit etc					
a	AHU-01 (For ICU First Floor)	12 TR	1	Set		
b	AHU-02 (For ICU 3rd Floor)	12 TR	1	Set		

c	AHU-03 (For ICU 2nd Floor)	14 TR	1	Set		
d	AHU-04 (For ICU 2nd Floor)	14 TR	1	Set		
e	AHU-01-A (For OT-1 3rd Floor) (DUTY)	09 TR	1	Set		
f	AHU-01-B (For OT-1 3rd Floor) (STAND BY)	09 TR	1	Set		
g	AHU-02-A (For OT-2 3rd Floor) (DUTY)	09 TR	1	Set		
h	AHU-02-B (For OT-2 3rd Floor) (STAND BY)	09 TR	1	Set		
i	AHU-03-A (For OT-3 3rd Floor) (DUTY)	09 TR	1	Set		
j	AHU-03-B (For OT-3 3rd Floor) (STAND BY)	09 TR	1	Set		
k	AHU-04-A (For OT 2nd Floor) (DUTY)	09 TR	1	Set		
l	AHU-04-B (For OT 2nd Floor) (STAND BY)	09 TR	1	Set		
m	AHU-05 (For Recovery Room 3rd Floor)	05 TR	1	Set		
4	Energy Recovery Ventilators (ERV) to Recover Cooling From Exhaust Air & To Cool Fresh Air complete with standard components etc.					
	ERV-1 (For 2nd Floor) (1760 CFM)		1	No		
	ERV-2 (For 3rd Floor) (1760 CFM)		1	No		
5	DUCTED INLINE EXHAUST FANS for Toilet Exhaust Complete with Motor & Housing etc					
A	<u>For 2ND FLOOR</u>					
	350 CFM		3	No		
	560 CFM		1	No		
	100 CFM		2	No		
	Wall Mounted Fancy type Propeller Fan		4	No		
B	<u>For 3RD FLOOR</u>					
	350 CFM		3	No		
	560 CFM		1	No		
6	Supply of DDC controller with panel for DX AHU's		5	Set		
7	TOUCH Panel with controller , Dampers Motor Actuators Temperature Sensors, Pressure sensor , Humidity Sensors etc fully automatic with panels for OT's only		4	Set		
8	4 way CASSETTE TYPE UNITS, Reversible Heat Pump type complete with Standard Control & Components.					
a	2 TR Capacity		2	Set		
			TOTAL COST for Above Items			
			17 % GST (+)			
			G.TOTAL COST with 17 % GST			

9	Installation , Rigging, Shifting and Placement of following equipment / items and materials as per drawings & site Requirement & as per International Engineering Standards					
a	Indoor Decorative 4-way cassette Type Units					
		1.00	10	No		
		1.25	8	No		
		1.50	4	No		
		2.00	30	No		
		2.50	4	No		
		4.00	10	No		
b	Branch Connectors/Y Joints	-	1	Lot		
c	ALL DC VRF Out Door Condensing Units	USRT				
	Air-cooled Condensing Unit (First Floor ICU)	11.5	1	No		
	Air-cooled Condensing Unit (2nd Floor)	38.2	2	No		
	Air-cooled Condensing Unit (3rd Floor)	28.6	3	No		
d	Branch Connectors/Y Joints		1	Lot		
10	Installation , Rigging, shifting & placement of Hygienic , DX- Type ,Double Skin Air Handling Units with High Efficiency ALL DC VRF Condensing units including expansion kit & control kit etc					
	AHU-01 (For ICU First Floor)	12 TR	1	Set		
	AHU-02 (For ICU 3rd Floor)	12 TR	1	Set		
	AHU-03 (For ICU 2nd Floor)	14 TR	1	Set		
	AHU-04 (For ICU 2nd Floor)	14 TR	1	Set		
	AHU-01-A (For OT-1 3rd Floor) (DUTY)	09 TR	1	Set		
	AHU-01-B (For OT-1 3rd Floor) (STAND BY)	09 TR	1	Set		
	AHU-02-A (For OT-2 3rd Floor) (DUTY)	09 TR	1	Set		
	AHU-02-B (For OT-2 3rd Floor) (STAND BY)	09 TR	1	Set		
	AHU-03-A (For OT-3 3rd Floor) (DUTY)	09 TR	1	Set		
	AHU-03-B (For OT-3 3rd Floor) (STAND BY)	09 TR	1	Set		
	AHU-04-A (For OT 2nd Floor) (DUTY)	09 TR	1	Set		
	AHU-04-B (For OT 2nd Floor) (STAND BY)	09 TR	1	Set		
	AHU-05 (For Recovery Room 3rd Floor)	05 TR	1	Set		
11	Installation of Energy Recovery Ventilators (ERV) as per Engineering Standard					
	ERV-1 (For 2nd Floor) (1760 CFM)		1	No		
	ERV-2 (For 3rd Floor) (1760 CFM)		1	No		
12	Installation of DUCTED INLINE EXHAUST FANS for Toilet Exhaust.					
A	For 2ND FLOOR					
	350 CFM		3	No		
	560 CFM		1	No		
	100 CFM		2	No		
	Wall Mounted Fancy type Propeller Fan		4	No		

B	<u>For 3RD FLOOR</u>					
	350 CFM		3	No		
	560 CFM		1	No		
13	Installation of DDC controller with panel for DX AHU's		5	Set		
14	Installation of TOUCH Panel with controller , Dampers Motor Actuators Temperature Sensors, Pressure sensor , Humidity Sensors etc .		4	Set		
15	Supply & Installation of SEAMLESS ,Best Quality Copper Pipes & Fittings L or K type with all accessories / hanging Supports/hanging frames etc as per Engineering Practice.					
	SIZES :	Φ 1-3/4"	370	RFT		
		Φ 1-5/8"	700	RFT		
		Φ 1-1/4"	275	RFT		
		Φ 1-1/8"	780	RFT		
		Φ 7/8"	400	RFT		
		Φ 3/4"	1200	RFT		
		Φ 5/8"	2000	RFT		
		Φ 1/2"	1000	RFT		
		Φ 3/8"	2000	RFT		
		Φ 1/4"	700	RFT		
16	Supply & installation of Pre-Molded Best Quality CLOSED CELL 1/2 " Thick Foam Insulation for Copper Piping to protect from Sweating etc as per Engineering Practice.					
	SIZES :	Φ 1-3/4"	370	RFT		
		Φ 1-5/8"	700	RFT		
		Φ 1-1/4"	275	RFT		
		Φ 1-1/8"	780	RFT		
		Φ 7/8"	400	RFT		
		Φ 3/4"	1200	RFT		
		Φ 5/8"	2000	RFT		
		Φ 1/2"	1000	RFT		
		Φ 3/8"	2000	RFT		
		Φ 1/4"	700	RFT		
17	Supply & installation of High Efficiency HEPA Type Air Filters Complete with Filter Housing , Hanging Frame suitable for Ceiling Suspension for ICUs Air Outlets only.		240	SQFT		
18	Supply & installation of Pre Insulated Round Flexible Ducts Suitable for Filter Housing Etc.	Φ 6.0"	320	RFT		
19	Supply & Installation of Best Quality GI Sheet Metal Ducting complete with Hangers & Support as per SMACNA Standard & Engineering Practice.		30000	SQFT		
20	Supply & installation of Fiber Glass Duct Insulation complete with Factory applied Vapour barrier, Cloth etc as per Standard Engineering Practice.					

a	25 mm Thick with 16 kg/m3 Density (For Non exposed Ducts)		22000	SQFT		
b	50 mm Thick with 24 kg/m3 Density (For Exposed Ducts)		8000	SQFT		
21	Supply & Installation of 1 lb density, 6 Inch wide Best Quality Canvas Cloth to use as Flexible Duct Connectors to isolate Ducting from AHUs.		190	SQFT		
22	Supply & Installation of Good quality Volume Control Dampers		25000	SQIN		
23	Supply & Installation of Air Inlets & Outlets Devices					
a	Return Air Grills		20000	SQIN		
b	Supply Air Diffusers		19000	SQIN		
23	Supply and Installation of 26 Gauge Cladding work on G.I Ducting For Exposed Ducts Only		13000	SQFT		
24	Supply and Installation of 18 Gauge G.I Cable Tray for Copper Pipes & Cables etc.					
a	Size : 8 " x 6 "		300	RFT		
b	Size : 18 " x 6 "		340	RFT		
c	Size : 12 " x 4 "		800	RFT		
25	Supply & Installation of UPVC piping with 1/2" thick Closed Cell Foam insulation or equivalent for Unit Drain & Electric Cables (where required).					
a	Sizes:	Φ 1.0"	2000	RFT		
b		Φ 1.50"	1500	RFT		
26	Supply & Installation of 3/4 core 16 mm square PVC/PVC Copper conductor Power Cable for each VRF System, Condensing units,AHUs etc.	16mm2	650	RFT		
27	Supply & Installation of 3/4 core 10 mm square PVC/PVC Copper conductor Power Cable for each VRF System, Condensing units,AHUs etc.	10mm2	1500	RFT		
28	Supply & Installation of 3/4 core 06 mm square PVC/PVC Copper conductor Power Cable for each VRF System, Condensing units,AHUs etc.	6mm2	2100	RFT		
29	Supply & Installation of 2 core 1.5 mm square PVC/PVC Copper conductor Power Cable for each VRF System, Condensing units,AHUs etc.	1.5mm2	2800	RFT		
30	Supply & Installation of Bare Copper Conductor Earth Wires complete with clamping etc.	4 mm2	1000	RFT		
31	Supply & Installation of Communication wiring from outdoor relevant unit to each indoor unit. Sheilded wire 2 core 0.75 sqmm in cable tray/ PVC pipe/Conduit.	0.75mm2	5000	RFT		
32	Supply & Installation of Communication CAT-6 Cables for DDC controller , Touch Panel etc for All DX-AHUs.	Cat-6	1600	RFT		

33	Supply & Installation of Electrical DBs/Panels for All DX-Air Handling units, VRF All DC Condensing Units , VRF Condensing Units for DX-AHUs etc as per Electrical Standard etc.		4	Nos		
34	Construction of Foundations for all DX-AHUs , VRF Out Door Condensing Units etc		1	Job		
35	Proper Wall Openings , Beam Cutting and other holes for Copper piping & Ducts etc.		1	Job		
36	Air Balancing of System		1	Job		
37	Preparation of Shop Drawings for all Floors		1	Job		
38	Preparation of As Built Drawings Hard Copy & in		1	Job		
39	Testing , Commissioning & Start of All Equipment & System including Additional R-410a Refrigerant Charging in Circuit .		1	Job		
40	4 way CASSETTE TYPE UNITS, Reversible Heat Pump type complete with Standard Control & Components.					
a	2 TR Capacity		2	Set		
					TOTAL COST	
					SST @13 %	
					G.TOTAL COST with 13 % SST	

Note : The above mentioned **Capacity required at 50 CDB ambient** Temperature.
All Power supply to Contractor DBs / Panels Shall be arranged by GIMS.