

BILL OF QUANTITIES							
NAME OF PROJECT:-COMMERCIAL CUM RESIDENTIAL COMPLEX							
Name of Work :- VRF SYSTEM							
S.NO	SOR NO.	SOR NAME	DESCRIPTION	QTY	UNIT	RATE	AMT
A			EQUIPMENT			RS	RS
1.1.A							
1	46.18	VRV/VRF outdoor AC unit	VRV/VRF outdoor AC unit:- Supply installation testing and commissioning of VRV /VRF /MRV outdoor units with following multiple inverter based scroll type compressors, electronic expansion valve, R 410A/ecofriendly green refrigerant, cooling & heating mode both options, special pre-coated fin type heat exchanger, low noise direct driven propeller condenser fans in each module with top discharge including internal wiring, microprocessor controls, safety. The condensing unit should be capable of providing cooling between +/- 5deg. C. to 48 deg. C & heating within 0 deg. C to 15 deg. C, COP not less than 3.3. Each system should have the provision to combine maximum 3 nos compressor in each outdoor unit, every single outdoor unit should not have more than maximum Capacity 20 HP (3 phase) each compressor complete as per specification. Outdoor/indoor units should be of same make (brand). (Single phase/three phase)				
	46.18.15		34 HP COOLING ONLY	2	NOS	844447	16,88,894
	46.18.14		32 HP COOLING ONLY	4	NOS	805161	32,20,644
			MAKE - SAMUNG , MITSUBISHI , O GENERAL				
			DESIGNED FOR 52 DEG CENTIGRATE				
2	46.20	VRF/VRV indoor AC unit (ceiling mounted 4 way)	VRF/VRV indoor AC unit (ceiling mounted 4 way):- Supply installation testing and commissioning of 4 way round flow ceiling suspended/mounted cassette type unit comprising of copper evaporator, electronic expansion valve, blower, motor, filter pad, auto air swing louvers, temperature &on/off display with inbuilt drain pump & decorative panels including internal wiring, controls. Dimension in terms of length & width should not be more than 950mmX 950mm with wireless remote controller. (Single phase/three phase)				
	46.20.8	4.13 TR	4.13 TR	19	NOS	70562	13,40,678

3	46.14	Ductable AC	Ductable AC :- Supply installation testing and commissioning of, air cooled ductable air conditioning unit of following capacity with scroll compressor of approved make suitable for operation on 3 phase 415 V, 50 Hz AC supply. Comprising of copper condenser, and aluminum fins, and first charge refrigerant. The indoor comprising of fan, fan motor, copper tube, aluminum finned cooling coil, drain pan, filter, controls, safety with ecofriendly gas R410/R410A excluding connection copper pipe of required size, insulation, stand for outdoor unit, connection copper lead wire, condensed water outlet pipe complete etc as required. Outdoor/indoor units should be of same make (brand).				
	46.14.1	5.0 - 5.5 TR three phase	5.0 - 5.5 TR three phase	4	NOS	127411	5,09,644
4	46.22	VRF/VRV indoor AC unit (ceiling mounted 2 way)	VRF/VRV indoor AC unit (ceiling mounted 2 way):- Supply installation testing and commissioning of 2 way flow ceiling suspended/mounted cassette type unit comprising of copper evaporator, electronic expansion valve, blower, motor, filter pad, auto air swing louvers, temperature & on/off display with inbuilt drain pump & decorative panels including internal wiring, controls. Dimension in terms of length & width should not be more than 950mmX 950mm with wireless remote controller. (Single phase/three phase)				
		2.08 TR	2.08 TR	34	NOS	90241	30,68,194
5	46.35	Y joints	Y joints:- Supply, installation, testing & commissioning of ref nut/Y-joints brass for indoor and outdoor units of suitable size as per requirement,	51	NOS	5500	2,80,500
			TOTAL OF VRF EQUIPMENT				1,01,08,554

			INSTALLATION OF EQUIPMENT				
6	46.33						
6.1	46.33.6	Installation of cassette unit 4/2/1 way	VRF/VRV indoor AC unit installation charges: - Installation of cassette unit 4/2/1 way flow ceiling suspended/mounted cassette type unit & decorative panels including labor for internal wiring, controls with wireless remote controller. (Single phase/three phase)	53	EACH	4,000	2,12,000
6.2	46.33.8	Installation of mid static ductable ceiling mounted type	RF/VRV indoor AC unit installation charges:- Installation of mid static ductable ceiling mounted type including labor for internal wiring, controls with cordless remote. (Single phase/three phase)	4	EACH	4,000	16,000
6.3	46.33.11	Installation of VRF/VRV/ MRV outdoor unit	VRF/VRV outdoor AC unit installation charges: - Installation of VRF/VRV/ MRV outdoor unit is including labor for internal wiring, controls complete as per specification. (single phase/three phase)				
			34 HP COOLING ONLY	68	PER HP		
			32 HP COOLING ONLY	128	PER HP		
			TOTAL	196	PER HP	1,400	2,74,400
7	46.30	Copper piping	Copper piping: - Supply, installation, testing and commissioning of interconnecting copper refrigerant pipe work (19mm/13mm thick) duly insulated with elastomeric nitrile rubber type tubular insulation between indoor & outdoor units as per specifications. And exposed piping should be wrapped with glass woven cloth and lag coating for vapour barrier and weather protection. Joints shall be covered with nitrile rubber tape of 3 mm thick complete as per specification.				
	46.30.9	6,4 mm OD	6.4 mm O.D. wall thickness $\geq$ 0.8mm (insulation – 13 mm thick)	100	RMT	475	47,500
	46.30.9	9.5 mm OD	9.5 mm O.D. wall thickness $\geq$ 0.8mm (insulation – 13 mm thick)	100	RMT	588	58,800
	46.30.9	12.7 mm OD	12.7 mm O.D. wall thickness $\geq$ 0.8mm (insulation – 13 mm thick)	100	RMT	689	68,900
	46.30.9	15.9 mm OD	15.9 mm O.D. wall thickness $\geq$ 0.8mm (insulation – 13 mm thick)	100	RMT	874	87,400
	46.30.8	19.1 mm OD	19.1 mm O.D. wall thickness $\geq$ 1.0mm (insulation – 13 mm thick)	80	RMT	889	71,120

	46.30.7	22.2 mm OD	22.2 mm O.D. wall thickness $\geq$ 1.0mm (insulation – 19 mm thick)	70	RMT	975	68,250
	46.30.6	25 mm OD	25 mm O.D. wall thickness $\geq$ 1.2mm (insulation – 19 mm thick)	40	RMT	1,249	49,960
	46.30.4	34.9 mm OD	34.9 mm O.D. wall thickness $\geq$ 1.4mm (insulation – 19 mm thick)	25	RMT	1,821	45,525
	46.30.3	38 mm OD	38 mm O.D. wall thickness $\geq$ 1.4mm (insulation – 19 mm thick)	20	RMT	1,977	39,540
	46.30.2	41.1 mm OD	41.1 mm O.D. wall thickness $\geq$ 1.4mm (insulation – 19 mm thick)	20	RMT	2,379	47,580
8	46.41	Control cable	Control cable: - Supply and laying, testing & commissioning of following sizes of copper conductor control cables on existing tray including fixing clamps & proper connections to equipment etc. complete as required.				
	46.41.1	2C x 0.75 sq.mm	2C x 0.75 sq.mm	220	RMT	64	14,080
	46.41.2	4Cx1.5 sq.mm	4Cx1.5 sq.mm	210	RMT	140	29,400
	46.41.3	4Cx2.5 sq.mm	4Cx1.5 sq.mm	240	RMT	214	51,360
	46.41.4	4Cx4 sq.mm	4Cx 4 sq.mm	250	RMT	350	87,500
	46.41.5	4Cx 6 sq.mm	4Cx 6 sq.mm	180	RMT	473	85,140
9	46.31	Drain piping	Drain piping :- Providing and fixing of CPVC, 6Kg/cm ² drain water piping with fittings, support and insulated with 6 mm thick closed cell elastomeric nitrile rubber insulation complete as per specification.				
	46.31.1	20mm dia	20mm dia ID	115	RMT	171	19,665
	46.31.2	25mm dia	25mm dia ID	120	RMT	202	24,240
	46.31.3	32mm dia	32mm dia ID	100	RMT	297	29,700
	46.31.4	40mm dia	40mm dia ID	120	RMT	354	42,480
10	18.8	G.I. pipes	Providing and fixing G.I. pipes complete with G.I. fittings and clamps, including cutting and making good the walls etc.				
	18.8.1	Internal Exposed on wall	Internal work - Exposed on wall				
	18.8.1.1	15MM	15 mm dia. nominal bore	120	METER	211	25,320
	18.8.1.2	20MM	20 mm dia. nominal bore	130	METER	255	33,150
	18.8.1.3	25MM	25 mm dia. nominal bore	140	METER	300	42,000
	18.8.1.4	32MM	32 mm dia. nominal bore	100	METER	361	36,100

	18.8.1.5	40MM	40 mm dia. nominal bore	80	METER	479	38,320
	18.8.1.6	50MM	50 mm dia. nominal bore	80	METER	596	47,680
				650			
11	41.24	Cable tray	Supply and erection of hot dip G.I. cable tray perforation not more than 17.5% for specific dimensions along with tees, bends. The cable tray shall be hang from ceiling/ fixed to wall with necessary angle/flat iron/hanging rod, for ceiling suspensions, clamp, anchor fastener, nuts, bolts, washers, not more than 1.0 mtr. apart complete as per specification to complete the job. The tray shall be as follows :-				
	41.24.1	100x50x1.6mm thick	100x50x1.6mm thick	40	METER	586	23,440
	41.24.2	150x50x1.6mm thick	150x50x1.6mm thick	30	METER	699	20,970
	41.24.3	300x50x1.6mm thick	300x50x1.6mm thick	15	METER	1,027	15,405
12	46.48	AHU kit	AHU kit: - Supply installation testing and commissioning of AHU kit to integrate with AHUs to various combination of static and CFM requirement shall be connected to IDUs of VRF complete as required as per specification.	6	NOS	42515	255090
13	46.43	Outdoor stand fabrication	Outdoor stand fabrication :- Supply, fabrication and erection of angle/channel/flat iron stand, hanging arrangement for air conditioning machines & ducts etc, back /support clamps or other similar work etc. including nut bolts of required size, making holes, fabrication, welding, cutting, etc. and painting with one coat of red oxide paint & two coat of enamel paint as required as per specification.	300	KG	85	25,500

			AIR DISTRIBUTION				
14	46.40	FLEXIBLE CONNECTION	Flexible connections :- Providing & fixing of flexible canvas connection between indoor unit and duct to avoid the vibration transfer				
				4	NOS.	1,794	7,176
15	46.36	Ducting	Ducting:- Supply and fixing of site fabricated GI sheet metal ducts in accordance with the approved shop drawings and as required as per specifications. GI sheet will be as per IS-277. All necessary GI /MS supports using thread rods (as directed). Angle, flat, and anchor bolts, food grade neoprene gaskets, food grade adhesive included in the scope.				
	46.36.1	24 GUAGE	24 GUAGE	280	SQ.M.	1,291	3,61,480
16	46.38	Internal duct acoustic insulation	Internal duct acoustic insulation: - Supply, installation, testing and commissioning of internal duct acoustic insulation with open cell structured class "O" fire retardant nitrile rubber with density 140 - 180 kg/m ³ and specs as per RISAC chart specification sheet inside of the AHU supply air ducting up to 4 mtr. length from AHU mouth as per the specifications, it should have antimicrobial properties.				
	46.38.2	10 mm thick	10 mm thick	20	SQ.M.	989	19,780
17	46.37	Thermal insulation	Thermal insulation :- Supplying and fixing of following thickness of mat finish closed cell nitrile rubber (class "1") insulation on existing duct after applying two coats of cold setting adhesive complete as per specifications and as required.				
	46.37.3	12/13 mm thick	12/13 mm thick	50	SQ.M.	691	34,550
18	46.39		GRILLS / DIFFUSER				
	46.39.1	Al. air grills	Supplying & fixing of powder coated extruded aluminum air grills without volume control damper complete as required.				
				7	SQ.M.	9,565	66,671

19	18.57	Cutting holes R.C.C. floors and roofs	Cutting holes upto 15x15 cm in R.C.C. floors and roofs for passing drain pipe etc. and repairing the hole after insertion of drain pipe etc. with cement concrete 1:2:4(1 cement : 2 sand : 4 graded stone aggregate 20 mm nominal size) including finishing complete so as to make it leak proof.	60	NOS.	129	7,740
20	15.4	Cutting reinforcement bar	Extra for cutting reinforcement bars manually/ by mechanical means in R.C.C. work (Payment shall be made on the cross sectional area of R.C.C. work) as per direction of Engineer-in Charge.	100	SQ.M.	276	27,600
			TOTAL OF INSTALLATION- VRF	Rs.			25,58,512
A			TOTAL FOR EQUIPMENT SUPPLY				1,01,08,554
B			TOTAL FOR INSTALLATION OF EQUIPMENT				25,58,512
			GRAND TOTAL				1,26,67,066
			SAY				1,26,68,000

In Words Rs. - ONE CRORE TWENTY SIX LACS SIXTY EIGHT THOUSAND ONLY