

DETAILED ESTIMATE

Name of work:-Providing & Installation of VRV/VRF system in Resource Centre Block of NIFT at Bhouri, Bhopal.

S.N	Description of Item	Qty.	Unit	Rate	Amount Rs.	DSR-25/ MR
1	Supplying, Installation, Testing & Commissioning of Modular type Variable Refrigerant Flow/Variable Refrigerant Volume air cooled Outdoor units suitable for cooling/heating having 100% hermetically sealed inverter type twin Rotary/Scroll Compressor(s), minimum two compressors (with individual separate PCB) for above 14HP modules, microprocessor based Controller, top discharge type condensing unit(s), with R-410-A Refrigerant or equivalent, vibration Isolators with suitable foundation etc. complete as required. To have better efficiency condenser fan shall be capable to operate at different speed with respect to load. The unit shall deliver the rated capacity and in confirmation as per IS 18728:2024 and CPWD Specifications and work even at 50°C ambient temperature without tripping. The system shall be able to deliver 100% of the rated capacity upto 39 OC. The unit shall be suitable to work on 400V +/- 10%, 3 Phase, 50Hz AC power supply and BMS compatible. The unit shall be filled with first charge of the refrigerant and ready for use as required. The condenser should be coated with a hydrophilic film to prevent water accumulation on the surface of the heat exchanger, enhance water dispersion, and reduce the risk of degradation, thereby improving overall performance and durability. The Indian Seasonal Energy Efficiency Ratio (ISEER) of the unit shall be as per Energy Conservation and Sustainable Building Code (ECSBC) 2024 as below and complete as per CPWD specification, connections, inter connections etc. as required. (For capacity <40 kW ISEER 5.4, Capacity > 40 and <70 ISEER 5.5, Capacity > 70 ISEER 5.6 for ECSBC Building) For Cooling or Heating or Both					
1.1	14 HP to 22 HP	146	HP	19111.00	2790206.00	31.1.3
2	Supplying, Installation, Testing and Commissioning of following minimum capacity 4 way Cassette Type Indoor ceiling mounted unit equipped with synthetic washable media pre-filter, fan section with low noise fan/dynamically balanced blower, multispeed motor, coil section with DX Copper coil, electronic expansion valve, outer cabinet, drain pump, grill, necessary supports, vibration Isolation, Corded remote control etc., suitable for operation on single phase 230 V ± 10%, 50Hz AC supply, complete, as required. The Indoor units must shut down upon receiving a signal from the BMS System/Fire Signals. The system shall be capable to adjust air flow as per room requirement in auto mode. The cooling capacity of indoor unit will be at air inlet conditions of 27°C DB and 19°C WB temperature. (Make will be same as of Outdoor)					
2.1	2.6 TR	4	Each	40814.00	163256.00	31.4.7
2.2	3.6 TR	21	Each	44269.00	929649.00	31.4.8
2.3	4.1 TR	12	Each	45781.00	549372.00	31.4.9
3	Supplying, Installation, Testing and Commissioning of Y/T/Multi Joints. Joints shall be of same Original Equipment Manufacturer (OEM) make as of ODUs and IDUs					
3.1	Indoor units	37	Each	4535.00	167795.00	31.13.1
3.2	Outdoor Multi Joint	5	Each	8098.00	40490.00	31.13.2
4	Supplying, Installation, testing and commissioning including vaccumiazation and Nitrogen testing of following nominal sizes of soft/hard drawn copper refrigerant piping for VRV/VRF system, complete with fittings, with suitable adjustable ring type hanger supports, jointing/brazing including accessories, insulated with XPLE Class-O tubular insulation/with Class-O closed cell elastomeric nitrile rubber tubular sleeves sections of 19 mm thick insulation as given below for Suction and Liquid lines, all accessories as per specifications etc. as required.					
4.1	6.4 mm dia (OD) (Soft drawn) with tube thickness 1.2	5	Meter	256.00	1280.00	31.14.1
4.2	9.5 mm dia (OD) (Soft drawn) with tube thickness 1.2 mm	135	Meter	346.00	46710.00	31.14.2
4.3	12.7 mm dia (OD) (Soft drawn) with tube thickness 1.2 mm	20	Meter	487.00	9740.00	31.14.3
4.4	15.86 mm dia (OD) (Soft drawn) with tube thickness 1.2 mm	110	Meter	615.00	67650.00	31.14.4

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4.5	19 mm dia (OD) (Hard drawn) with tube thickness 1.2 mm	85	Meter	739.00	62815.00	31.14.5
4.6	22.2 mm dia (OD) (Hard drawn) with tube thickness 1.2 mm	40	Meter	904.00	36160.00	31.14.6
4.7	28.58 mm dia (OD) (Hard drawn) with tube thickness 1.2 mm	20	Meter	1157.00	23140.00	31.14.8
4.8	31.8 mm dia (OD) (Hard drawn) with tube thickness 1.62 mm	15	Meter	1222.00	18330.00	31.14.9
4.9	34.9 mm dia (OD) (Hard drawn) with tube thickness 1.62 mm	20	Meter	1286.00	25720.00	31.14.10
5	Supplying and charging of Additional Refrigerant R410A for pipe line excluding ODU charged Refrigerant testing and commissioning the equipment etc.as required.	110	Kg.	1448.00	159280.00	MR
6	Supplying and installing following size of perforated Hot Dipped Galvanised Iron cable tray (Galvanisation thickness not less than 50 microns) with perforation not more than 17.5%, in convenient sections, joined with connectors, suspended from the ceiling with two numbers GI Suspenders i/c base of suitable size GI angle, GI bolts & nuts, fastner etc as required					
6.1	150 mm width X 50 mm depth X 1.6 mm thickness	220	Meter	803.00	176660.00	4.6.2
6.2	300 mm width X 50 mm depth X 1.6 mm thickness	180	Meter	1062.00	191160.00	4.6.4
7	Supplying and fixing of following sizes of medium class PVC conduit along with accessories in surface/recess including cutting the wall and making good the same in case of recessed conduit as required.					
7.1	20 mm	400	Meter	151.00	60400.00	1.21.1
8	Supplying and drawing following sizes of FRLS/HFFR PVC insulated copper conductor, single core cable in the existing surface/ recessed steel/ PVC conduit as required.					
8.1	3 x 1.5 Sqmm	450	Meter	104.00	46800.00	1.17.3
9	Supplying and fixing suitable size GI box with modular plate and cover in front on surface or in recess, including providing and fixing 3 pin 5/6 A modular socket outlet and 5/6 A modular switch, connections etc. as required.	37	Each	545.00	20165.00	1.31
10	Supplying and fixing following way, single pole and neutral, sheet steel, MCB distribution board, 240 V, on surface/ recess, complete with tinned copper bus bar, neutral bus bar, earth bar, din bar, interconnections, powder painted including earthing etc. as required. (But without MCB/RCCB/Isolator)					
10.1	12 way , Double door	1	Each	2871.00	2871.00	2.3.3
11	Supplying and fixing 5 amps to 32 amps rating, 240/415 volts, "C" curve, miniature circuit breaker suitable for inductive load of following poles in the existing MCB DB complete with connections, testing and commissioning etc. as required.					
11.1	Single Pole	10	Each	285.00	2850.00	2.10.1
11.2	40 Amp. Double Pole	1	Each	1534.00	1534.00	MR
12	Providing and fixing Chlorinated Polyvinyl Chloride (CPVC) pipes, having thermal stability for hot & cold water supply, including all CPVC plain & brass threaded fittings, including fixing the pipe with clamps at 1.00 m spacing. This includes jointing of pipes & fittings with one step CPVC solvent cement and testing of joints complete as per direction of Engineer in Charge. Internal work - Exposed on wall					Civil DSR-23] Vol-II
12.1	25mm nominal dia pipes.	110	Metre	401.55	44170.50	18.7.3
12.2	32mm nominal dia pipes.	90	Metre	518.75	46687.50	18.7.4
13	Steel work welded in built up sections/framed work, including cutting, hoisting, fixing in position and applying a priming coat of approved steel primer using structural steel etc. as required.					
13.1	In stringers, treads, landings etc. of stair cases, including use of chequered plate wherever required, all complete	300	Kg.	123.60	37080.00	10.25.1 [DSR Civil-23]

S.N	Description of Item	Qty.	Unit	Rate	Amount Rs.	DSR-25/ MR
14	Supplying and laying following size copper conductor PVC insulated & PVC sheathed multicore round flexible industrial cable of 1.1 KV grade between indoor to indoor unit for signal/control cable on surface/existing cable tray/existing pipe complete with connections at both end with glands and copper lugs complete etc. as required.					
14.1	2 Core 1.5 Sq mm	180	Mtr.	94.00	16920.00	MR
15	Supplying and laying copper conductor of following sizes XLPE insulated armoured cable of 1.1 KV grade as per IS:7098 (Part-I) 1988 between various pressure switch and system controller / starter etc. on surface/existing cable tray/existing pipe complete with connections at both end with glands and copper lugs complete etc. as required.					
15.1	4x10 Sqmm	120	Mtr.	1644.00	197280.00	MR
16	Supplying and making end termination with brass compression gland and Copper lugs for following size of PVC insulated and PVC sheathed XLPE aluminium conductor cable of 1.1 kV grade as required.					
16.1	4 X 10 sq. mm (25mm)	2	Set	330.00	660.00	11.1.32
17	Supplying and laying of following size DWC HDPE pipe ISI marked along with all accessories like socket, bend, couplers etc. conforming to IS 14930, Part II complete with fitting and cutting, jointing etc.direct in ground (75 cm below ground level) including excavation and refilling the trench but excluding sand cushioning and protective covering etc., complete as required.					
17.1	120 mm dia (OD-120 mm & ID-103 mm nominal)	100	Meter	417.00	41700.00	15.16.3
18	Supplying & laying of following size XLPE insulated & PVC sheathed aluminium conductor armoured power cable ISI marked ref. to IS: 7098 (part 1) of 1.1 KV grade in the In the existing G.I.pipe / DWC HDPE Pipe/ Loose/ loop/ left for connection/Open Duct/Surface etc. as required.					
18.1	3½x120 Sqmm	250	Meter	1711.00	427750.00	MR
19	Supplying and making end termination with brass compression gland and aluminium lugs for following size of PVC insulated and PVC sheathed / XLPE aluminium conductor cable of 1.1 kV grade as required.					
19.2	3½ X 120 sq. mm (45mm)	2	Set	710.00	1420.00	11.1.25
20	Supply & Fixing of following size Class-0 tubular insulation/with Class-0 closed cell elastomeric nitrile rubber tubular sleeves sections on drain pipe complete with all accessories etc. as required:					
20.1	25 mm (6 mm thickness)	110	Mtr.	63.00	6930.00	MR
20.2	32 mm (6 mm thickness)	90	Mtr.	83.00	7470.00	MR
21	Supplying, installation, testing and commissioning of outdoor type double door, Front & Back openable feeder pillar cubical shaped floor mounted 300 mm, deep sectionalised, compartmentalized, MV panel of suitable size fabricated from CRCA steel of 2 mm thick for frame work, enclosure and doors, 3 mm thick for gland plates chemically treated with seven tank process before painting for surface treatment and powder coated,with aluminum busbar with DMC / SMC busbar supports suitable for 3 Phase 415 V 50 HZ AC supply i/c providing and fixing the following switchgear mounted thereon complete with gaskets and interconnections, connection as per specification complete as required. (the face area should not be less then 1.0 Sqmtr.)- For VRF panel					
	(A) Incoming :					
(i)	250 Amp, 36 KA, 4 pole MCCB (Ics = 100% Icu) at 415 Volt, 50 Hz with thermal megnetic release with spreader terminal and extended rotary handle. -01 No.					

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(ii)	Aluminium bus bar chamber with bus bar of rating 200 Amp, 4 pole at 415 V, duly PVC sleeved - 1 Set.					
(iii)	Danger notice plate -1 No.					
(iv)	LED type indicating lamp with MCB's -3 Set.					
(v)	3 phase Digital type Volt meter with selector switch - 1 Nos.					
(vi)	3 phase Digital type Ammeter with selector switch & CT's- 1 Nos.					
	(B) Outgoing :					
(i)	63 Amp, 300mA, 04 Module, 10 KA RCBO - [07+02 Nos.] = 9 Nos.					
(ii)	40 Amp, DP MCB - 02 Nos.	1	Set	140897.00	140897.00	MR
22	Earthing with G.I. earth plate 600 mm X 600 mm X 6 mm thick including accessories, and providing masonry enclosure with cover plate having locking arrangement and watering pipe of 2.7 Meter long etc. with charcoal/ coke and salt as required.	2	Set	8351.00	16702.00	5.4
23	Providing and fixing 25 mm X 5 mm G.I. strip in 40 mm dia G.I. pipe from earth electrode including connection with G.I. nut, bolt, spring, washer excavation and re-filling etc. as required.	10	Meter	755.00	7550.00	5.11
24	Providing and fixing 25 mm X 5 mm G.I. strip on surface or in recess for connections etc. as required.	25	Meter	287.00	7175.00	5.15
	Total Rs.				6594425.00	

Assistant Engineer (E) (P)
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