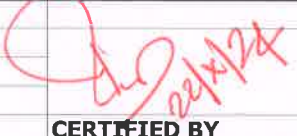


<b>BLR-T1-080 LOUNGE PH-2</b> <b>BLR/PO/24-25/000143</b> <b>HVAC HIGH SIDE</b>			
<b>BIAL DOMESTIC LOUNGE - PHASE II</b> <b>HVAC BOQ SUMMARY</b>			
Sr.No	Description	Total Amount	1st Running bill amount
1	<b>AIR HANDLING UNIT:</b>	1,654,000.00	1,441,000
2			
5	<b>VENTILATION SYSTEM:</b>	49,500.00	34,650
	<b>TOTAL WITHOUT TAX</b>	<b>1,703,500.00</b>	<b>1,475,650</b>
	<b>IGST</b>	<b>476,980.00</b>	<b>413,182</b>
	<b>SGST @</b>		
	<b>Other taxes if applicable</b>		
	<b>TOTAL WITH TAX</b>	<b>2,180,480.00</b>	<b>1,888,832</b>
	 <b>CERTIFIED BY</b> <b>RANJANDAS SHETTY</b>		<b>ACCEPTED BY</b> <b>ANJLE MEP PROJECTS PVT LTD</b>

Sr. No.	Description Items	Unit	Qty	Rate	Total Amount	%	Amount										
	<b>Note:</b>																
a	Prices shall be based on supply, installation, testing & commissioning (SITC) at site including all taxes, duties, transportation & insurance etc.																
1	<b>AIR HANDLING UNIT:</b>																
1.1	<b>CHW FLOOR MOUNTED AIR HANDLING UNIT</b> SITC of double skin floor mounted AHU with suitable plug type fans with IE3 efficient 3phase motor, UVGI, Moisture eliminators etc. The thickness of panel to be with 42+/-3mm thick PUF Insulation. The coil shall be of hard copper tubes covered by aluminium fins with 13-15 FPI, The AHU to have a SS condensate drain tray which shall be duly insulated with 13mm thick class O nitrile rubber insulation. The contractor to furnish the GA drawings of AHU prior to ordering with necessary technical catalogues and fan curve selections. The noise level near the AHU should not cross more than 60dba at 1m away from the unit. Also the AHU shall have a prefilter of MERV 8 with necessary framework. AHU body frame shall be with Aluminium. AHU shall have TEFC Squirrel Cage IP 55 Protected VFD Compatible induction motor, copper header, "Copper to MS" adopter, vibration isolation pad. Scope also includes limit switch with lights inside AHU.  AHUs shall be selected for a maximum face velocity of 500 FPM (2.5MPS) and as per schedule of air handling units. Fan outlet velocity shall not exceed 1600 FPM (8.12 MPS). Chilled water inlet & Outlet temp to be 8 & 13.5°C. AHUs shall be of following design parameters :																
a	<table border="1"> <thead> <tr> <th>Capacity (Cfm)</th> <th>Tonnage TR</th> <th>ESP (mm WG)</th> <th>No. of Rows</th> <th>USGPM</th> </tr> </thead> <tbody> <tr> <td>11200</td> <td>25</td> <td>40</td> <td>4/6</td> <td>60</td> </tr> </tbody> </table>	Capacity (Cfm)	Tonnage TR	ESP (mm WG)	No. of Rows	USGPM	11200	25	40	4/6	60	No	1	415000	415,000	0.80	332,000
Capacity (Cfm)	Tonnage TR	ESP (mm WG)	No. of Rows	USGPM													
11200	25	40	4/6	60													
1.2	<b>VRF FLOOR MOUNTED AIR HANDLING UNIT</b> SITC of double skin floor mounted AHU with suitable plug type fans with rated 3phase motor. The thickness of panel to be with 42+/-3mm thick PUF Insulation. The coil shall be of hard copper tubes covered by aluminium fins with 13-15 FPI. The AHU to have a SS condensate drain tray which shall be duly insulated with 13mm thick class O nitrile rubber insulation. The contractor to furnish the GA drawings of AHU prior to ordering with necessary technical catalogues and fan curve selections. The noise level near the AHU should not cross more than 60-65dba at 3m away from the unit. Also the AHU shall have a prefilter of MERV 8 with necessary framework. AHU body frame shall be with Aluminium. AHU shall have TEFC Squirrel Cage IP 55 Protected VFD Compatible induction motor, and vibration isolation pads. Scope also includes limit switch with lights in AHU. Cooling Coil section with AHRI certified Coil (0.15mm AL 13 FPI fins / 12.7 mm OD 27 SWG Cu Tube) suitable for VRF Outdoor Unit (R410a refrigerant).  AHUs shall be selected for a maximum face velocity of 500 FPM (2.5MPS) and as per schedule of air handling units. Fan outlet velocity shall not exceed 1600 FPM (8.12 MPS). AHUs shall be of following design parameters :																
a	<table border="1"> <thead> <tr> <th>Capacity (Cfm)</th> <th>Tonnage TR</th> <th>ESP (mm WG)</th> <th>No. of Rows</th> </tr> </thead> <tbody> <tr> <td>10500</td> <td>27</td> <td>40</td> <td>4/6</td> </tr> </tbody> </table>	Capacity (Cfm)	Tonnage TR	ESP (mm WG)	No. of Rows	10500	27	40	4/6	No.	1	410,000	410,000	0.80	328,000		
Capacity (Cfm)	Tonnage TR	ESP (mm WG)	No. of Rows														
10500	27	40	4/6														
1.3	<b>SUPPLY OF VRF OUT-DOOR UNITS</b>  Supply of air cooled variable refrigerant flow modular type ODUs each comprising of multiple rotary/scroll compressors fully inverter driven, full charge of refrigerant gas (R-410a), lubricating oil and all accessories as per the specifications. The ODUs shall be suitable for operation on 415 ± 10% volts, 50Hz, 3 phase AC power supply and the condensing units shall be of following capacities:																
a	<b>OUTDOOR UNITS</b> 34 HP at site conditions. <b>Note : The unit shall be selected taking indoor and ambient deration, refrigerant pipe length deration in to account.</b>	No.	1	765,000	765,000	1.00	765,000										
1.3	<b>AHU CONTROLLER AND EEV KIT</b> Supply of AHU Controller, Electronic Expansion Valve (EEV) Kit and all other necessary accessories to connect with VRF ODU's.	No.	1	20,000	20,000	0.80	16,000										

WEP Consultants		BIAL DOMESTIC LOUNGE - PHASE II						
1st running bill HVAC BOQ							RA-1	
1.4	<b>FRAME WORK</b> Supply, fabrication and installation of PCC / Siporex blocks for AHU support. AHU framework shall be part of AHU supply. Each AHU shall require 9nos. of blocks.	Sets	3	8000		24,000		
1.5	<b>SPARE FILTER</b> One set of MERV 8 throw away type filters to be provided for all AHUs. These filters will be used for commissioning. Original set of filters will be installed as instructed by Architect / Consultants.	Sets	2	10000		20,000		
	<b>GENERAL NOTES:</b> a. Fan outlet velocity - 1600 FPM b. Contractor shall submit static pressure calculation for all above units to Client/Consultant. c. Any change in motor HP shall be made at no extra cost to client. d. Fan efficiency shall be minimum 75% e. The cost shall be included lifting & shifting of each equipment / material with all necessary arrangement. Also, it shall be included the cost of scaffolding required for installation of such material / equipment.							
<b>SUB-TOTAL</b>						<b>1,654,000</b>		<b>1,441,000</b>
5	<b>VENTILATION SYSTEM:</b>							
5.1	<b>INLINE CIRCULAR FAN:</b> SITC of Inline Circular fan (silent type) with speed control, direct drive package - motor with outlet dampers, fan inlet & outlet flexible connection, hanging arrangement with vibration isolators etc. Power will be provided 5 ft away from fan and necessary control wiring with plug will be provided by AC contractor. Motor efficiency IE2/IE3, AMCA Certification and Noise levels at 1m distance to be specified. The fans shall have BMS Compatibility.							
a	700 CFM @ 25 mmwg ESP	Nos	2	18,500		37,000	0.70	25,900
b	100 CFM @ 15 mmwg ESP	No	1	12,500		12,500	0.70	8,750
	<b>NOTES:</b> a. Contractor shall submit static pressure calculation for all above units to Client/Consultant. b. Any change in motor HP shall be made at no extra cost to client. c. The cost shall be included lifting & shifting of each equipment / material with all necessary arrangement. Also, it shall be included the cost of scaffolding required for installation of such material / equipment.							
<b>SUB-TOTAL</b>						<b>49,500</b>		<b>34,650</b>

**BLR-080 LOUNGE PH-2**  
**HVAC WORK, PO NO.BLR/PO/24-25/000143**

**LOW SIDE**

BIAL DOMESTIC LOUNGE - PHASE II			
FIRST RUNNING BILL FOR HVAC BOQ SUMMARY			
Sr.No	Description	Total Amount	RA-1
2	CHILLED WATER PIPING WITH INSULATION:	125,800.00	75,065.00
3	INDIGENOUS WORK:	437,350.00	172,270.00
4	DX DUCTABLE UNITS:	473,000.00	332,000.00
6	SHEET METAL WORKS:	1,332,300.00	799,930.00
7	THERMAL & ACOUSTIC INSULATION:	348,750.00	194,250.00
8	ELECTRICAL WORKS:	150,250.00	55,000.00
	<b>TOTAL WITHOUT TAX</b>	<b>2,867,450.00</b>	<b>1,628,515.00</b>
	CGST @		
	IGST@18%	516,141.00	293,132.70
	Other taxes if applicable		
	<b>TOTAL WITH TAX</b>	<b>3,383,591.00</b>	<b>1,921,647.70</b>
	<b>CERTIFIED BY</b> RANJANDAS SHETTY	<b>ACCEPTED BY</b> ANJLE MEP PROJECTS PVT LTD	

Sr. No.	Description Items	Unit	Qty	Rate	Total Amount	%	Amount
a	<b>Note:</b> Prices shall be based on supply, installation, testing & commissioning (SITC) at site including all taxes, duties, transportation & insurance etc.						
2	<b>CHILLED WATER PIPING WITH INSULATION:</b>						
2.1	<b>CHW PIPE</b> SITC of MS Heavy duty class 'C' ERW Chilled Water pipe conforming to IS 1239 - 2004 primer painted including bends, tees, MS supports, PUFF saddles, anchor fasteners, steel angles and any other material required to complete the work. The piping flange connection bolts, washers and nuts should be hot dipped galvanised. Flourscent Plastic Sticker/ paint shall be applied to indicate Water flow directions. Only End flanges to be used for capping of pipes. "Table E" of BS code for flange thickness to be adhered.						
a	Dia 50 mm	Rmt	15	1050	15,750	70%	11,025
b	Dia 65 mm	Rmt	RO	1350			
2.2	<b>CHILLED WATER PIPING INSULATION</b> SITC of insulation for chilled water. piping. For internal pipe - Stick 25mm thick Nitrile rubber Insulation with anti microbial coating, sealing all joints. putting all joints at 300 mm intervals with PVC bands and finally sealing with 3M glass cloth vapour barrier.						
a	Dia 50 mm	Rmt	15	550	8,250	70%	5,775
b	Dia 65 mm	Rmt	RO	850			
2.3	<b>BUTTERFLY VALVES</b> SITC of CI Butterfly valves shall be wafer type, bi-directional Butterfly valves MSS SP-67; ANSI Class 150 carbon steel body conforming to ASTM A216, Type WCB, TFE seats and TFE packing, stainless steel (SS410) PTFE coated shafts, matching flanges, locking devices extended flow control lever, insulation, nuts, bolts and neoprene gasket etc. Valve should be suitable for 16 kg/Sq.cm Pressure <b>Make: Advance / Audco / Kirlsokar</b>						
a	Φ 50 mm	Nos.	4	4850	19,400	70%	13,580
b	Φ 65 mm	Nos.	RO	6850			
2.4	<b>Y-STRAINER</b> SITC of following sizes of Carbon steel type Y-strainer with matching flanges, Staineless steel mesh, bolts, supports etc. Valve should be suitable for 16 ka/Sa.cm. Pressure.						
a	Φ 50 mm	Nos.	1	4,250	4,250	70%	2,975
b	Φ 65 mm	Nos.	RO	6540			
2.5	<b>PIBCV VALVES</b> SITC of Pressure Independent Balancing cum Control Valves (PIBCV) including integrated motorised control valve and balancing device for combined flow and water balancing requirement. Valve body to be rated for PN 16. The valve design flow rate should be factory calibrated with +/- 5% flow accuracy. Valve shall have necessary measuring ports, drain port, flanges etc., Valve shall also provide temperature sensor with necessary cabling (min 5mtr length to be considered with each valve). The balancing to be done through microprocessor based hand held terminal / POT and the same results shall be furnished in the water balancing report as part of commissioning report and handing over manual.						
a	Φ 50 mm	Nos.	1	44500	44,500	70%	31,150
b	Φ 65 mm	Nos.	RO	65000			
2.6	<b>BALL VALVE</b> SITC of following sizes of Brass Ball Valve consist of Cap, matching flanges, bolts, supports, etc. Valve should be suitable for 16 ka/Sa.cm. Pressure.						
b	Dia 20 mm	Nos.	2	1800	3,600	70%	2,520

MEP Consultants Sr. No.	Description Items	Unit	Qty	Rate	Total Amount	%	Amount
<b>2.7</b>	<b>Auto Air Vent Valves</b>						
	<b>Providing and fitting Auto Vent Valves.</b>						
a	SITC of Auto air vent in each risers & common headers & AHU. 3/4" auto vent valves at each coil / riser/ header.	Nos.	2	1500	3,000	60%	1,800
<b>2.8</b>	<b>SITC of Pressure gauges &amp; Thermometers</b>						
	Necessary pressure gauges and thermometers 4" Dial type.						
a	Pressure gauges Range 0-10 Kg/CM2	Nos.	2	1650	3,300	60%	1,980
b	Thermometer, Range 0-50 deg C	Nos.	2	1450	2,900	60%	1,740
c	Thermowells	Nos.	4	1050	4,200	60%	2,520
d	Test plugs	Nos.	RO	1500			
<b>2.9</b>	<b>DRAIN PIPING:</b>						
	SITC of UPVC Drain Pipe from unit drain pans to nearest floor drain, complete with all screwed joints and providing & fixing in position the necessary elbows, tees, reducers, interconnection, flanges, P-trap, connector to floor trap along with 9mm thick tubular nitrile rubber insulation.						
a	40mm dia.	Rmt.	10	410	4,100		
b	32mm dia.	Rmt.	15	370	5,550		
c	25mm dia.	Rmt.	20	350	7,000		
	<b>NOTES FOR PIPING:</b>						
a	<b>Cover all open pipe ends with muslin cloth during construction</b>						
b	<b>Pipe cleaning &amp; chemical treatment as per specs shall be included in the piping cost.</b>						
c	<b>Unit rates for all indicated sizes of pipes &amp; valves shall be furnished.</b>						
d	<b>Cleaning/Painting of pipe before insulation shall be included in piping cost.</b>						
e	<b>The piping support should be as per tender specification and additional supports are to be provided Contractor as decided by Consultant.</b>						
f	<b>All the valves shall be insulated with the same material as that of Chilled water piping and cost of insulation for valves shall be considered.</b>						
	<b>SUB-TOTAL</b>				<b>125,800</b>		<b>75,065</b>
<b>3</b>	<b>INDIGENOUS WORK:</b>						
<b>3.1</b>	<b>INSTALLATION OF VRF OUT-DOOR UNITS with Controller &amp; EEV KIT</b>						
	Installation, Charging, Testing and commissioning of VRF system with Environment friendly refrigerant for the below mentioned system along with controller and EEV kit. This shall include lifting, shifting and positioning of outdoor units, nitrogen leak testing, oil charging, vacuumisation etc..						
a	34HP	No.	1	20,000	20,000		
<b>3.2</b>	<b>VRF REFRIGERANT PIPING &amp; FITTING WITH INSULATION</b>						
	SITC of high pressure copper refrigerant piping suitable for R 410a refrigerant of suitable size as required and duly insulated with 19mm thick closed cell elastomeric insulation in tubing form. External Refrigerant piping shall be laid on GI covered cable trays. Piping inside occupied spaces shall be supported using GI ladder type cable trays throughout. Entire refrigerant piping work be carried out in accordance with the specifications.						
a	10500 CFM AHU with 34HP VRF ODU's	Rmt	50	<b>2,650</b>	132,500	70%	92,750
	<b>Note: Refrigerant piping shall include liquid + gas pipe with all necessary fittings. Also, the size of the same shall be as per manufactured standard.</b>						
<b>3.3</b>	Additional gas charging - Over and above standard Gas charging quantity	Kg	25	1,850	46,250		
<b>3.4</b>	<b>REFNET JOINTS</b>						
	SITC of Special Refrigerant T-joints for VRV units	No	1	6,500	6,500	70%	4,550
<b>3.5</b>	<b>POWER CABLING</b>						
	Supply, Laying, Testing & Commissioning of Power cabling with PVC armoured copper cable with terminations between ODU and ELCB. Power to ELCB to be provided near each ODU by electrical contractor (Supply to be provided within 3 metres near ODU).						

MEP Consultants Sr. No.	Description Items	Unit	Qty	Rate	Total Amount	%	Amount
a	10 sqmm 4 core	Rmt	100	850	85,000		
c	8 SWG Copper Wire	Rmt	200	100	20,000		
<b>3.6</b>	<b>COMMUNICATION CABLE</b> SITC of communication cables between outdoor units and indoor units and Indoor to Indoor units, ODU and Intelligent Touch Controller.						
a	1.5 sqmm 2 core	Rmt	90	190	17,100	70%	11,970
<b>3.7</b>	<b>CABLE TRAYS</b> Supplying & Fixing of following sizes of GI cable tray duly painted perforated type of height 75mm along with necessary bends, reducers etc. anchored along the wall / suspended from the ceiling with necessary MS supports.						
a	150mm wide	Rmt	RO	550			
b	300mm wide	Rmt	200	450	90,000	70%	63,000
<b>3.8</b>	<b>FRAMEWORK FOR VRF ODU</b> Supply, Fabrication and Installation of MS frame using channels / angle iron sections as required for mounting of air cooled remote condenser in service areas or terrace level. The frame work shall be applied with red oxide primer and thereafter, two coats of enamel paint of approved colour. The general arrangement drawing for frame work shall be got approved from the Architects/ Structural Engineers prior to commencement of fabrication.	No.	2	10,000	20,000		
<b>Note :</b>	<b>Quantities of refrigerant piping and cabling are based on the drawings with Indoor &amp; Outdoor units Locations shown and for the specified configuration. Vendor to confirm refrigerant piping and cabling quantities based on the system configuration being offered by them.</b>						
<b>SUB-TOTAL</b>					<b>437,350</b>		<b>172,270</b>
<b>4.0</b>	<b>DX DUCTABLE UNITS:</b>						
<b>4.1</b>	<b>DX DUCTABLE UNITS :</b> SITC of Ductable Split units with Inverter compressor and R407c / R410a referigant gas. The units should be complete with indoor unit, condensing unit, controls, control panel, wiring, refrigerant piping, gas charging, etc. The control cabling and insulated refrigerant piping should be based on the distance between indoor unit and condensing unit being 50 Mtr/Ckt. Unit shall have corded remote. Refrigerant piping slope to be maintained towards condensing unit <b>Make: Bluestar/ Carrier / Daikin / Voltas / Bluestar</b>						
a	3.0 TR Ducted unit with condensing units	Nos.	2	135,000	270,000	80%	216,000
<b>4.2</b>	<b>REFERERANT PIPING WITH 13MM INSULATION</b> SITC of Refrigerant piping with pressure testing, vacuum & refrigerant charging with 13mm thick nitrile rubber tubular insulation <b>Piping Make: Maxflow/ Mandev/ Heling</b> <b>Insulation Make: Armaflex &amp; K-flex</b>						
a	3.0 TR Ducted unit with condensing units	Rmt	100	1,450	145,000	80%	116,000
<b>4.3</b>	<b>POWER &amp; CONTROL CABLE</b> Supply, laying, dressing, testing and commissioning of 1100V grade copper conductor, galvanized steel wire/strip armoured XLP, PVC sheathed power and control cables of following sizes to be laid on trays/ wall/racks including clamping and earthing as per Specification. Cabling to be provided from starter panel to the individual unit including necessary termination. <b>Make: Polycab, KEI &amp; Finolex</b>						
a	Power Cabling between the MCB`s/MCCB`s and the Air Conditioning unit	Rmt	20	550	11,000		
b	Control Cabling between indoor & outdoor units	Rmt	120	200	24,000		
<b>4.4</b>	<b>FRAME WORK:</b> Supply, fabrication, installation of MS base frame /platform for outdoor units as mentioned in the drawing which shall be completed with vibration isolation pads, supports, hangers, railing, brackets etc. Construction as approved by Architect / Consultant. Apply 2 coats of paint Finish painting to be as approved by Architect. Outdoor unit structure with access ladder to be provided by A.C contractor	Nos	2	8,000	16,000		

MEP Consultants Sr. No.	Description Items	Unit	Qty	Rate	Total Amount	%	Amount
4.5	<b>MCB FOR DX ODU</b> SITC of IP65 rated PVC enclosure with 16A TPN MCB For HVAC Outdoor Units	Nos.	2	3500	7,000		
<b>Note:</b>	<b>All cables &amp; conduits to be FRLS. MCCB's &amp; earthing of required rating &amp; sizes shall be provided by Electrical contractor.</b>						
<b>SUB-TOTAL</b>					<b>473,000</b>		<b>332,000</b>
<b>6</b>	<b>SHEET METAL WORKS:</b>						
<b>6.1</b>	<b>GI SHEET RECTANGULAR METAL DUCTING</b> Supply, Fabrication, Testing, and Commissioning of Factory Fabricated GI Sheet Metal 120GSM Rectangular boxed ducting, Plenums, Cowls, Elbows with turning vanes, Splitters, Reducers, Flanges, Collars etc as per SMACNA standards, The complete ducting shall be provided with MS Supports, Rods, Angles, Flanges, Bracing, Rubber Gaskets, Wooden frames, Canvas Connections, etc. as per drawings and specifications.						
a	18 Gauge GI Sheet Metal Duct (Above 2001mm & Plenum)	Sq.mtr	15	1730	25,950	70%	18,165
b	20 Gauge GI Sheet Metal Duct (1101-2000mm)	Sq.mtr	10	1520	15,200	70%	10,640
c	22 Gauge GI Sheet Metal Duct (601-1100mm)	Sq.mtr	250	1270	317,500	70%	222,250
d	24 Gauge GI Sheet Metal Duct (0-600mm)	Sq.mtr	300	1105	331,500	70%	232,050
<b>6.2</b>	<b>GI SHEET ROUND METAL DUCTING</b> Supply, Fabrication, Testing, Air Flow Balancing and Commissioning of Factory Fabricated GI Sheet Metal 120GSM Round ducting, Splitters, Flanges, Collars etc as per SMACNA standards. The complete ducting shall be provided with MS Supports, Rods, Angles, Flanges, Bracing, Rubber Gaskets, etc. as per drawings and specifications.						
a	24 Gauge GI Sheet Metal Duct (0-600mm)	Sq.mtr	25	1250	31,250	70%	21,875
<b>6.3</b>	<b>AIR BALANCING &amp; LEAK TEST</b> Air balancing activity with calibrated air hood and subsequent air balancing report with consultants approval for entire project. Also, cost shall include light / smoke test of complete duct length.	Lot	1	10000	10,000		
<b>6.4</b>	<b>EXTRUDED ALUMINIUM GRILLES</b> SITC of Aluminium extruded powder coated 150mm width grilles model EP-00/15/30 with four side flanges, etc.						
a	Linear Grille	Sq.mtr	10	7340	73,400	50%	36,700
b	Curve Grille	Sq.mtr	3	9500	28,500	50%	14,250
<b>6.5</b>	<b>EXTRUDED ALUMINIUM CEILING SQUARE DIFFUSER</b> Supply, Installation, Testing and Balancing of supply & return air diffusers as per the approved shop drawings and specifications. Each diffuser shall be equipped with fixed air distribution grid, removable key-operated volume control damper, complete with insulated plenum box. The diffusers shall be anti-smudge ring/flush type. Powder coated extruded aluminium diffusers of approved colour & shade of following sizes:						
a	Supply Air Square Diffuser with Plenum Box & Control Damper 225x225mm Neck Size	Nos.	4	2250	9,000	50%	4,500
b	Return Air Round Diffuser 225x225mm Neck Size	No.	4	2450	9,800	50%	4,900
<b>6.6</b>	<b>EXTRUDED ALUMINIUM CEILING ROUND DIFFUSER</b> Supply, Installation, Testing and Balancing of supply & return air diffusers as per the approved shop drawings and specifications. Each diffuser shall be equipped with fixed air distribution grid, removable key-operated volume control damper, complete with insulated plenum box. The diffusers shall be anti-smudge ring/flush type. Powder coated extruded aluminium diffusers of approved colour & shade of following sizes:						
a	Supply Air Round Diffuser with Plenum Box & Control Damper 300mmΦ Neck Size	Nos.	2	2150	4,300	50%	2,150




MEP Consultants									
Sr. No.	Description Items	Unit	Qty	Rate	Total Amount	%	Amount		
6.7	<b>MULTI LEAF VOLUME CONTROL DAMPER</b> SITC of opposed blade aerofoil type 1.2 mm thick Anodized Aluminium volume control dampers for ducts shall be provided with concealed gears, plastic operator and quadrants for manual control of volume of air flow and for proper balancing of the air distribution system as per the approved shop drawings and specifications. Makes :Dynacraft/Cosmos	Sq.mtr	2	9500	19,000	50%	9,500		
6.8	<b>OPPOSED BLADE DAMPER</b> SITC of Aluminium Opposed blade dampers black powder coated vertical blades type for supply air collar. The damper should be gear operated type.	Sq.mtr	2	4450	8,900	50%	4,450		
6.9	<b>BACK DRAFT DAMPER</b> SITC of galvanized steel construction back draft dampers ( BDD )	Sq.mtr	RO	10500					
6.10	<b>MOTORISED FIRE DAMPER</b> Supply, installation, testing and commissioning of UL 555 /UL 555 S motorized fire / smoke dampers at wall / floor crossing consist of 2.0 Hours rating, 16G GI frame & blade, 20G GI casing, brass bushing for friction free operation, S.S jamb seal for minimum leakage, ON/OFF type actuator with transformer etc. as per specification and approved shop drawings. (Actuators of 24VAC built Fire / Smoke damper	Sq.mtr	4	16500	66,000	50%	33,000		
a	Actuator with transformer	Nos.	7	10500	73,500	50%	36,750		
b	Control logic & wiring for shutting all fire dampers in each AHU's, when AHU is OFF for any reason.	Lot	1	50000	50,000	50%	25,000		
c									
6.11	<b>JET NOZZLE</b> Supply, Installation, Testing and Balancing of Powder coated extruded aluminium Jet nozzles with shutter type damper etc. as per the approved shop drawings and specifications. 325mm Φ Neck Size	Nos.	30	5050	151,500	50%	75,750		
6.12	<b>DISC VALVE</b> SITC of Aluminium powder coated Disc valve suitable for exhausting toilet foul air, comprising of an adjustable centre cone and coupling sleeve made of Aluminium sheet duly epoxy painted with approved color.								
a	150mmΦ	Nos.	18	1,650	29,700	50%	14,850		
b	100mmΦ	Nos.	RO	1,650					
6.13	<b>PRE-INULATED FLEXIBLE DUCT</b> SITC of following sizes of insulated flexible ducting with its matching supports, clamps and square to round pieces and other accessories fittings etc. The flexible duct shall be made of triple lamination of aluminium foil, polyester and metalised polyester film permanently bonded to a coated spring steel wire helix. The exterior shall be wrapped with 25mm thick 16 kg / cum fibreglass insulation. The outer insulation jacket / vapour barrier made of fibreglass reinforced metalised polyester film laminate.								
a	350mmΦ	Rmt	30	1,210	36,300	50%	18,150		
b	300mmΦ	Rmt	5	1150	5,750	50%	2,875		
c	250mmΦ	Rmt	5	1050	5,250	50%	2,625		
d	150mmΦ	Rmt	20	950	19,000	50%	9,500		
6.14	<b>CANVAS CONNECTION</b> Supply & fixing of fire rated flexible Canvas connections between mouth piece and initial piece of ducting with inspection zip.								
a	For AHU	Nos	2	2,650	5,300				
b	For Fan	Nos	2	2,850	5,700				
	<b>NOTES:</b> The ducting support should be as per tender specification and additional supports are to be provided by Contractor as decided by Consultant. Muslin cloth cover for all air outlets during construction. Air Flow balancing and Pressure testing of complete duct work as per DW/ SMACNA standard. Light testing/smoke testing shall be employed for leaks Silicon sealant for longitudinal & transverse joints as per specification. Jet Nozzle, Diffusers & grilles shall be powder coated as per color approved by Architect.								

MEP Consultants Sr. No.	Description Items	Unit	Qty	Rate	Total Amount	%	Amount
	<b>SUB-TOTAL</b>				<b>1,332,300</b>		<b>799,930</b>
<b>7</b>	<b>THERMAL &amp; ACOUSTIC INSULATION:</b>						
<b>7.1</b>	<b>THERMAL INSULATION FOR DUCTS</b> Supply & fixing of Thermal insulation for supply air duct using 13mm thick class " O " Closed cell nitrile rubber with anti-microbial coating on it. Insulation shall have Thermal conductivity of 0.033 W/(m.K) and water vapor permeance of 0.10. Joints should be sealed with 50 mm wide 3 mm thick self adhesive tape. The duct shall be stick with recommended adhesive.	Sq.mtr	410	600	246,000		
						70%	172,200
<b>7.2</b>	<b>ACOUSTIC INSULATION FOR DUCTS</b> Supply & fixing acoustic insulation for ducting using Class "1" closed cell elastomeric insulation of 10mm thick Nitrile rubber insulation adhesive, longitudinal & transverse joints sealed with adhesive in neat & clean manner. Material shall be processed Nitrile Rubber foam with anti-microbial protection. Insulation shall have thermal conductivity of 0.047 W/(m.K) and density of 140 - 180 kg/m³.	Sq.mtr	30	<b>1050</b>	31,500		
						70%	22,050
<b>7.3</b>	<b>ACOUSTIC INSULATION FOR AHU ROOM</b> Supply & fixing of Acoustic insulation for plant room using 50mm thick Twiga 300 rigid board stick using shalikote primer and GI frame work. Insulation to be covered with glass fiber cloth & finally with 24 G perforated Al. sheet.	Sq.mtr	75	950	71,250		
	<b>Note:</b>						
a.	<b>Insulation work to be coordinated with other agencies and repair to be included by contractor as per site requirement.</b>						
b.	<b>Vendors to take care of the installation, if any damages takes place the vendor to repair or replace and hand over to clients in good and acceptable condition.</b>						
c.	<b>Thermal insulation shall be internal for Elliptical / Exposed ducting.</b>						
	<b>SUB-TOTAL</b>				<b>348,750</b>		<b>194,250</b>
<b>8</b>	<b>ELECTRICAL WORKS:</b>						
<b>8.1</b>	<b>STARTER PANEL</b> SITC of indoor / outdoor, wall mounting type 3PH, 415VAC MOTOR STARTERS IN CRCA SHEET STEEL ENCLOSURE with necessary supporting brackets and required accessories, etc., The Enclosure shall be provided with knockouts suitable for cable termination at TOP & BOTTOM for incoming and outgoing power cables of A2XFY type and size specified. The starters shall be complete with suitable MPCB/MCCB, Contactor, Bi-metal O/L relay with SPP, ON/OFF Push buttons, on / off / trip indication Lamp, on off push button, & phase indication Lamp. Selection of relay, contractor, MPCB/MCCB etc. as per Type-2 Coordination.						
a	11200 CFM AHU - 7.5KW, 3PH, Starter Delta type	No.	1	<b>55000</b>	55,000	<b>50%</b>	<b>27,500</b>
b	10500CFM AHU - 7.5KW, 3PH, Starter Delta type	No.	1	<b>55000</b>	55,000	<b>50%</b>	<b>27,500</b>
<b>8.2</b>	<b>MCB FOR VRF ODU</b> SITC of IP65 rated PVC enclosure with 40A TPN MCB For HVAC Outdoor Units	Nos.	2	<b>4500</b>	9,000		
<b>8.3</b>	<b>POWER CABLING</b> Supply, handling, laying erecting proper connections testing and commissioning of following sizes of 1.1 KV grade XLPE insulated FRLS Aluminium /Copper conductor cables laid over MS supports cable racks or fixing on walls including clamping the cable to supports in an approved manner as required complete with Copper earthing as specified for continuous earthing along with cable. All complete as required and as per final instruction as given by Owners/ Consultants and as per Technical specifications. Earthing shall be measured separately and shall be connected in two runs. Power to ELCB to be provided near each ODU by electrical contractor						
a	<b>Power Cable:</b>						

MEP Consultants Sr. No.	Description Items	Unit	Qty	Rate	Total Amount	%	Amount
	CU 6 sqmm 6 core - 7.5KW	Rmt	20	750	15,000		
<b>b</b>	<b>Earthing:</b> 8 SWG GI Earthing	Rmt	40	100	4,000		
<b>8.4</b>	<b>CABLE TERMINATION :</b> Supply & Making of Cable termination of armoured / unarmoured cables 1.1 KV grade including installation of cable glands, cable lugs (Aluminium for A2XFY & copper for 2XFY & YY Double compression type), heat shrinkable sleeves on long ends, crimping paste etc. The work includes testing & commissioning of cables, meggering values & submitting reports of tests. (One set includes termination of all cores of one end only). All crimping tools & dies shall be arranged by contractor.						
<b>a</b>	CU 6 sqmm 6 core - 7.5KW	Nos.	2	2,000	4,000		
<b>8.5</b>	<b>CABLE TRAYS</b> Supplying & Fixing of following sizes of GI cable tray duly painted perforated type of height 50mm along with necessary bends, reducers etc. anchored along the wall / suspended from the ceiling with necessary MS supports.						
<b>a</b>	150mm wide	Rmt	15	550	8,250		
<b>b</b>	200mm wide	Rmt	RO	650			
	<b>SUB-TOTAL</b>				<b>150,250</b>		<b>55,000</b>
	<b>GRAND TOTAL</b>						



KITCHEN VENTILATION BOQ							
Sr.No	Description	Unit	Qty	Rate	Total Amount	% work done	Amount
	Note:						
	Prices shall be based on supply, installation, testing & commissioning (SITC) at site including all taxes, duties, transportation & insurance etc.						
<b>1</b>	<b>VENTILATION SYSTEM</b>						
<b>1.1</b>	<b>KITCHEN EXHAUST AIR FAN</b>						
	SITC of SISW Centrifugal Blower, Belt / Direct Drive, Statically & Dynamically Balanced, Backward Curved Impeller fan, Dunlop Anti-Vibration Pads etc. Motor should be outside stream with TEFC squirrel cage, weather protection shield, IP 55 rating with Class F Insulation, suitable for 3phase, 415volts, 50hz power supply. Sound level should be 60dB @ 3mtr distance. Fan should be painted with 2 coat of zinc chromate primer and 2 coats Epoxy paint. The quote shall include with MS frame, starter panel along with its required cable. Supplied with Dunlop Anti-Vibration Pads & Canvass Connection. (Vendor to crosscheck static pressure calculation).						
a	5000 CFM, 60mm Static (Class F)	No	1	195,000	195,000	80%	156,000.00
<b>1.2</b>	<b>INDUSTRIAL GRADE ELECTROSTATIC AIR CLEANER</b>						
	SITC of Dry scrubber – Electrostatic Air cleaner with starter panel as per specifications, suitable for following capacities, including electrical starter panel. The Air filtration efficiency should be between 90 to 95% & units shall be staked one above other or side by side as per site requirement, if vendor will propose multiple units.						
	Finishing - Power coated, Dark Blue						
	Operating voltage - 220 Vac +/-10%, 50 Hz (Single phase)						
	Features - Short circuit, arc protection and auto restore power supply, BMS (Building Management System) terminals provided, Auto power cut-off when door is opened, Indicator LEDs for normal or wash indicator, Set of Terminals for remote LED normal or wash indicator						
	Efficiency - Upto 95%, meets NIOSH 5026 Oil Mist Test						
	Particle Size - Collects particles as small as 0.01 microns						
	Motor - Sealead ball bearings UL, single phase.						
	Cell - Ionizing voltage - 12 KVdc						
	Collector voltage - 6 KVdc						
	One cell comprising of 9 ionizing wires and 25 collection plates						
	Controls - Auto cut-off when door is opened, Indicator lights for fault, normal or wash function.						
a	Pre-filter - Aluminium mesh, washable Dry contact for BMS, 5000 CFM	No	1	195,000	195,000	90%	175,500.00
<b>1.4</b>	<b>FRAMEWORK FOR FANS</b>						
	Supply, Fabrication and Installation of MS frame using channels/angle iron sections as required for mounting of ventilation fans & scrubber in areas shown in the layout. The frame work shall be applied with red oxide primer and thereafter, two coats of enamel paint of approved colour. The general arrangement drawing for frame work shall be got approved from the Architects/ Structural Engineers prior to commencement of fabrication.						
a	Exhaust Fan - 5000CFM	Lot	1	15,000	15,000		
b	Dry Scrubber - 5000 CFM	Lot	1	12,000	12,000		
	Note:						
a.	Fan outlet velocity - 1600 FPM						
b.	All cabinet fans should have plenum section.						
c.	Fresh air fan if any, should to have 6mm thick synthetic media washable filter with framework.						
d.	Contractor shall submit static pressure calculation for all above units to Client/Consultant.						
e.	Any change in motor HP or coil selection shall be made at no extra cost to client.						
f.	Fan efficiency shall be minimum 75%						
g.	The cost shall be included lifting & shifting of each equipment / material with all necessary arrangement. Also, it shall be included the cost of scaffolding required for installation of such material / equipment.						
					<b>417,000.00</b>		<b>331,500.00</b>

<b>BLR-T1-080 LOUNGE PH-2- KITCHEN VENTILATION LOW SIDE</b>			
<b>BLR/PO/24-25/000143</b>			
<b>BIAL DOMESTIC LOUNGE - PHASE II</b>			
<b>FIRST RUNNING BILL KITCHEN VENTILATION BOQ SUMMARY</b>			
<b>Sr.No</b>	<b>Description</b>	<b>Total Amount</b>	<b>RA-1</b>
2	SHEET METAL WORKS	-	
3	THERMAL INSULATION	468,500	321,212.50
4	ELECTRICAL WORKS	88,700	45,500.00
<b>TOTAL WITHOUT TAX</b>		<b>557,200</b>	<b>366,712.50</b>
IGST@18%		100,296	66,008.25
Other taxes if applicable			
<b>TOTAL WITH TAX</b>		<b>657,496</b>	<b>432,720.75</b>
 22/12/24			
<b>CERTIFIED BY</b>		<b>ACCEPTED BY</b>	
<b>RANJANDAS SHETTY</b>		<b>ANJLE MEP PROJECTS PVT LTD</b>	

BIAL DAY HOTEL							
KITCHEN VENTILATION BOQ							
Sr.No	Description	Unit	Qty	Rate	Total Amount	%	Amount
	Note:						
	Prices shall be based on supply, installation, testing & commissioning (SITC) at site including all taxes, duties, transportation & insurance etc.						
<b>2</b>	<b>SHEET METAL WORKS</b>						
<b>2.1</b>	<b>GI SHEET METAL DUCTING</b>						
	Supply, Fabrication, Testing, Air Flow Balancing and Commissioning of Factory Fabricated GI Sheet Metal 120GSM Rectangular boxed ducting, Plenums, Cowls, Elbows, Splitters, Reducers, Flanges, Collars etc as per SMACNA standards, The complete ducting shall be provided with MS Supports, Rods, Angles, Flanges, Bracing, Rubber Gaskets, Wooden frames, Canvas Connections, etc. as per drawings and specifications.						
c	22 Gauge GI Sheet Metal Duct (601-1100mm)	Sq.mtr	50	1,350	67,500	70%	47,250
d	24 Gauge GI Sheet Metal Duct (0-600mm)	Sq.mtr	150	1,250	187,500	70%	131,250
<b>2.2</b>	<b>SS EXHAUST AND FRESH AIR GRILLS</b>						
a	SITC of 18G SS 304 Fresh Air Grilles adjustable Double Deflector With S.S Volume Control Dampers. Grills to be of Double Deflection Type for ease of deflection on all sides.	Sq.mtr	0.75	8,500	6,375	70%	4,463
<b>2.3</b>	<b>DOOR TRANSFER GRILLE</b>						
	SITC of Aluminium extruded powder coated Door transfer grills. Door transfer grille (Back to Back)	Sq.mtr	0.25	11,500	2,875		
<b>2.4</b>	<b>MULTI LEAF VOLUME CONTROL DAMPER</b>						
	SITC of opposed blade aerofoil type 1.2 mm thick Anodized Aluminium volume control dampers for ducts shall be provided with concealed gears, plastic operator and quadrants for manual control of volume of air flow and for proper balancing of the air distribution system as per the approved shop drawings and specifications.	Sq.mtr	2.5	8,500	21,250	70%	14,875
<b>2.5</b>	<b>CURTAIN TYPE FIRE DAMPER</b>						
	SITC of curtain type fire dampers consist of 16G GI frame, 20G GI interlocking blades secured with SS springs, blades outside airstream clamped with fusible link UL-555 listed with melting point 165 / 225°F, etc; as per the approved shop drawings and specifications.						
a	Bare fire dampers	Sq.mtr	0.3	15500	4,650	70%	3,255
b	Fusible link as per specification UL 555 and CBRI approved	No.	1	1600	1,600	70%	1,120
<b>2.6</b>	<b>CANVAS CONNECTION</b>						
	Supply & fixing of flexible Canvas connections between mouth piece and initial piece of ducting. Flexible connections shall be fire resistant made of closely woven, double layer canvass / neoprene coated fibre glass.						
a	Cabiner Exhaust Fan	Nos	1	3,250	3,250		
c	Dry Scrubber	Nos	1	3,500	3,500		
	<b>NOTES:</b>						
	The ducting support should be as per tender specification and additional supports are to be provided by Contractor as decided by Consultant.						
	Muslin cloth cover for all air outlets during construction.						
	Pressure testing of complete duct work as per DW/ SMACNA standard.						
	Silicon sealant for longitudinal & transverse joints as per specification.						
	Diffusers & grilles shall be powder coated as per color approved by Architect.						
	<b>SUB-TOTAL</b>						

2	3	<b>THERMAL INSULATION</b>						
		SITC of Rockwool roll Insulation with stonewool fibres bonded with thermosetting resins, with factory applied laminated Woven Fiber glass cloth of 271GSM. Nominal density : 48 Kg/CuM. Thermal conductivity, < 0.042 W/m.K at 50°C. All Insulation material and adhesives shall be as per Class O for surface spread and in accordance with BS 476, & Class O for non-combustible grade. Also, cost shall include all necessary support and accessories.						
	a	50 mm Thick	Sq.mtr	200	850	170,000	70%	119,000
		<b>SUB-TOTAL</b>				<b>468,500</b>		<b>321,213</b>
	4	<b>ELECTRICAL WORKS</b>						
	4.1	<b>STARTER PANEL with VFD</b>						
		SITC of indoor / outdoor, wall mounting type 3PH, 415VAC MOTOR STARTERS IN CRCA SHEET STEEL ENCLOSURE with necessary supporting brackets and required accessories, etc., The Enclosure shall be provided with knockouts suitable for cable termination at TOP & BOTTOM for incoming and outgoing power cables of A2XFY type and size specified. The starters shall be complete with suitable MPCB/MCCB, Contactor, Bi-metal O/L relay with SPP, ON/OFF Push buttons, on / off / trip indication Lamp, on off push button, & phase indication Lamp. Selection of relay, contractor, MPCB/MCCB etc. as per Type-2 Coordination. Starter panel shall be BMS compatible. Variable frequency drives shall be provided with necessary sensors and controllers complete with control wiring in all respect as required. VFDs shall be provided with necessary bypass arrangement inside electrical starter panels with IP-55 enclosure.						
	a	5.5KW, 3PH, DOL Starter type for exhaust air fan	No	1	65,000	65,000	70%	45,500
	4.2	<b>POWER CABLING</b>						
		Supply, handling, laying effecting proper connections testing and commissioning of following sizes of 1.1 KV grade XLPE insulated FRLS Aluminium /Copper conductor cables laid over MS supports cable racks or fixing on walls including clamping the cable to supports in an approved manner as required complete with Copper earthing as specified for continuous earthing along with cable. All complete as required and as per final instruction as given by Owners/ Consultants and as per Technical specifications. Earthing shall be measured separately and shall be connected in two runs. Power to ELCB to be provided near each ODU by electrical contractor.						
	a	<b>Power Cable:</b>						
	a	CU 2.5 sqmm 4 core - Exhaust Fan	Rmt	10	350	3,500		
	c	CU 2.5 sqmm 3 core - Dry Scrubber	Rmt	10	320	3,200		
	b	<b>Earthing:</b>						
	a	8 SWG GI Earthing	Rmt	20	150	3,000		
	4.4	<b>CABLE TERMINATION :</b>						
		Supply & Making of Cable termination of armoured / unarmoured cables 1.1 KV grade including installation of cable glands, cable lugs (Aluminium for A2XFY & copper for 2XFY & YY Double compression type), heat shrinkable sleeves on long ends, crimping paste etc. The work includes testing & commissioning of cables, meggering values & submitting reports of tests. (One set includes termination of all cores of one end only). All crimping tools & dies shall be arranged by contractor.						
	a	CU 2.5 sqmm 4 core - Exhaust Fan	Nos.	2	2,500	5,000		
	4.5	<b>CABLE TRAYS</b>						
		Supplying & Fixing of following sizes of GI cable tray duly painted perforated type of height 50mm along with necessary bends, reducers etc. anchored along the wall / suspended from the ceiling with necessary MS supports.						
	a	150mm wide	Rmt	20	450	9,000		
		<b>SUB-TOTAL</b>				<b>88,700</b>		<b>45,500</b>
		<b>GRAND TOTAL</b>						



BIAL DAY HOTEL							
KITCHEN VENTILATION BOQ							
Sr.No	Description	Unit	Qty	Rate	Total Amount	%	Amount
	<b>Note:</b>						
	Prices shall be based on supply, installation, testing & commissioning (SITC) at site including all taxes, duties, transportation & insurance etc.						
<b>2</b>	<b>SHEET METAL WORKS</b>						
<b>2.1</b>	<b>GI SHEET METAL DUCTING</b>						
	Supply, Fabrication, Testing, Air Flow Balancing and Commissioning of Factory Fabricated GI Sheet Metal 120GSM Rectangular boxed ducting, Plenums, Cowls, Elbows, Splitters, Reducers, Flanges, Collars etc as per SMACNA standards, The complete ducting shall be provided with MS Supports, Rods, Angles, Flanges, Bracing, Rubber Gaskets, Wooden frames, Canvas Connections, etc. as per drawings and specifications.						
c	22 Gauge GI Sheet Metal Duct (601-1100mm)	Sq.mtr	50	1,350	67,500	70%	47,250
d	24 Gauge GI Sheet Metal Duct (0-600mm)	Sq.mtr	150	1,250	187,500	70%	131,250
<b>2.2</b>	<b>SS EXHAUST AND FRESH AIR GRILLS</b>						
a	SITC of 18G SS 304 Fresh Air Grilles adjustable Double Deflector With S.S Volume Control Dampers. Grills to be of Double Deflection Type for ease of deflection on all sides.	Sq.mtr	0.75	8,500	6,375	70%	4,463
<b>2.3</b>	<b>DOOR TRANSFER GRILLE</b>						
	SITC of Aluminium extruded powder coated Door transfer grills.						
	Door transfer grille (Back to Back)	Sq.mtr	0.25	11,500	2,875		
<b>2.4</b>	<b>MULTI LEAF VOLUME CONTROL DAMPER</b>						
	SITC of opposed blade aerofoil type 1.2 mm thick Anodized Aluminium volume control dampers for ducts shall be provided with concealed gears, plastic operator and quadrants for manual control of volume of air flow and for proper balancing of the air distribution system as per the approved shop drawings and specifications.	Sq.mtr	2.5	8,500	21,250	70%	14,875
<b>2.5</b>	<b>CURTAIN TYPE FIRE DAMPER</b>						
	SITC of curtain type fire dampers consist of 16G GI frame, 20G GI interlocking blades secured with SS springs, blades outside airstream clamped with fusible link UL-555 listed with melting point 165 / 225°F, etc; as per the approved shop drawings and specifications.						
a	Bare fire dampers	Sq.mtr	0.3	15500	4,650	70%	3,255
b	Fusible link as per specification UL 555 and CBRI approved	No.	1	1600	1,600	70%	1,120
<b>2.6</b>	<b>CANVAS CONNECTION</b>						
	Supply & fixing of flexible Canvas connections between mouth piece and initial piece of ducting. Flexible connections shall be fire resistant made of closely woven, double layer canvass / neoprene coated fibre glass.						
a	Cabiner Exhaust Fan	Nos	1	3,250	3,250		
c	Dry Scrubber	Nos	1	3,500	3,500		
	<b>NOTES:</b>						
	The ducting support should be as per tender specification and additional supports are to be provided by Contractor as decided by Consultant.						
	Muslin cloth cover for all air outlets during construction.						
	Pressure testing of complete duct work as per DW/ SMACNA standard.						
	Silicon sealant for longitudinal & transverse joints as per specification.						
	Diffusers & grilles shall be powder coated as per color approved by Architect.						
	<b>SUB-TOTAL</b>						

2	3	<b>THERMAL INSULATION</b>						
		SITC of Rockwool roll Insulation with stonewool fibres bonded with thermosetting resins, with factory applied laminated Woven Fiber glass cloth of 271GSM. Nominal density : 48 Kg/CuM. Thermal conductivity, < 0.042 W/m.K at 50°C. All Insulation material and adhesives shall be as per Class O for surface spread and in accordance with BS 476, & Class O for non-combustible grade. Also, cost shall include all necessary support and accessories.						
	a	50 mm Thick	Sq.mtr	200	850	170,000	70%	119,000
		<b>SUB-TOTAL</b>				<b>468,500</b>		<b>321,213</b>
	4	<b>ELECTRICAL WORKS</b>						
	4.1	<b>STARTER PANEL with VFD</b>						
		SITC of indoor / outdoor, wall mounting type 3PH, 415VAC MOTOR STARTERS IN CRCA SHEET STEEL ENCLOSURE with necessary supporting brackets and required accessories, etc., The Enclosure shall be provided with knockouts suitable for cable termination at TOP & BOTTOM for incoming and outgoing power cables of A2XFY type and size specified. The starters shall be complete with suitable MPCB/MCCB, Contactor, Bi-metal O/L relay with SPP, ON/OFF Push buttons, on / off / trip indication Lamp, on off push button, & phase indication Lamp. Selection of relay, contractor, MPCB/MCCB etc. as per Type-2 Coordination. Starter panel shall be BMS compatible. Variable frequency drives shall be provided with necessary sensors and controllers complete with control wiring in all respect as required. VFDs shall be provided with necessary bypass arrangement inside electrical starter panels with IP-55 enclosure.						
	a	5.5KW, 3PH, DOL Starter type for exhaust air fan	No	1	65,000	65,000	70%	45,500
	4.2	<b>POWER CABLING</b>						
		Supply, handling, laying effecting proper connections testing and commissioning of following sizes of 1.1 KV grade XLPE insulated FRLS Aluminium /Copper conductor cables laid over MS supports cable racks or fixing on walls including clamping the cable to supports in an approved manner as required complete with Copper earthing as specified for continuous earthing along with cable. All complete as required and as per final instruction as given by Owners/ Consultants and as per Technical specifications. Earthing shall be measured separately and shall be connected in two runs. Power to ELCB to be provided near each ODU by electrical contractor.						
	a	<b>Power Cable:</b>						
	a	CU 2.5 sqmm 4 core - Exhaust Fan	Rmt	10	350	3,500		
	c	CU 2.5 sqmm 3 core - Dry Scrubber	Rmt	10	320	3,200		
	b	<b>Earthing:</b>						
	a	8 SWG GI Earthing	Rmt	20	150	3,000		
	4.4	<b>CABLE TERMINATION :</b>						
		Supply & Making of Cable termination of armoured / unarmoured cables 1.1 KV grade including installation of cable glands, cable lugs (Aluminium for A2XFY & copper for 2XFY & YY Double compression type), heat shrinkable sleeves on long ends, crimping paste etc. The work includes testing & commissioning of cables, meggering values & submitting reports of tests. (One set includes termination of all cores of one end only). All crimping tools & dies shall be arranged by contractor.						
	a	CU 2.5 sqmm 4 core - Exhaust Fan	Nos.	2	2,500	5,000		
	4.5	<b>CABLE TRAYS</b>						
		Supplying & Fixing of following sizes of GI cable tray duly painted perforated type of height 50mm along with necessary bends, reducers etc. anchored along the wall / suspended from the ceiling with necessary MS supports.						
	a	150mm wide	Rmt	20	450	9,000		
		<b>SUB-TOTAL</b>				<b>88,700</b>		<b>45,500</b>
		<b>GRAND TOTAL</b>						