

**HVAC WORK**

HIGH SIDE BOQ			BOQ Rates		
SR. NO.	DESCRIPTION OF ITEM	TOTAL QTY	UNIT	RATE RS.	AMOUNT RS.
<b>1</b>	<b>Supply of VRV / VRF air conditioning system, out door unit (ODU) type-IV OEM standards working on HFCfree refrigerant R410A</b> or other required/ suitable green equivalent refrigerent, for cooling capacity delivering 100% at 43 deg. celcius and non stop cooling even at 56 deg. celcius and coefficient of performance (COP) 3.00 to 4.00, modular type horizontal/vertical hot air discharge suitable for total piping length upto 1000 meter operation in cooling mode with inverter based VRF/VRF technology microprocessor based control compressor starter / control panel complete with scroll compressor, air cooled anti corrosive copper condenser coil of suitable shape for increasing maximum heat transfer area, built in oil seperator, accumulator and oil receiver, copper tube alluminium fin air cooled condenser, condenser fan with motor suitable for 415V ± 10%, 50 Hz, 3 phase power supply, internal wiring and dirstcharge of refrigerent, etc. all housed in powder coated weather proof cabinate on provided angle iron frame or suitable foundation connected to the system in approved manner complete				
<b>i</b>	10 HP	4	Nos.		
<b>ii</b>	12 HP	-	Nos.		
<b>iii</b>	14 HP	1	Nos.		
<b>iv</b>	16 HP	2	Nos.		
<b>v</b>	18 HP	6	Nos.		
<b>vi</b>	20 HP	15	Nos.		
<b>vii</b>	22 HP	-	Nos.		
<b>viii</b>	24 HP	2	Nos.		
<b>ix</b>	28 HP	-	Nos.		
<b>2</b>	<b>Supply of VRV/VRF based ceiling sususpended four way cassette indoor unit (IDU) compact/ standard size of nominal cooling capacity</b> having EERas per BEEstandard and specification, suitable as per site requirement with swing louvers and adjustable blades feome sides, indoor unit complete with in-built drainage arrangements, fan, refrigerant liquid and refrigerent piping, cordless remote control, and fresh air port etc. IDU shall have anticorrosive coating suitable for coastal area complete in all respects, to operate on 1- phase, 230V, 50Hz, AC input supply, consisting with any additional refrigerent and oil charged as per requirement during installation and connected to the system complete.				
<b>i</b>	1.0 Ton - 470 CFM	4	Nos.		
<b>ii</b>	1.5 Ton - 490 CFM	16	Nos.		
<b>iii</b>	2.0 Ton - 695 CFM	45	Nos.		
<b>iv</b>	2.5 Ton - 825 CFM	-	Nos.		
<b>v</b>	3.0 Ton - 1095 CFM	5	Nos.		
<b>vi</b>	4.0 Ton - 1200 CFM	4	Nos.		
<b>3</b>	<b>Supply of VRV/VRF based Hi-Wall indoor unit size of nominal cooling capacity</b> having EERas per BEEstandard and specification, suitable as per site requirement with swing louvers and adjustable blades feome sides, indoor unit complete with in-built drainage arrangements, fan, refrigerant liquid and refrigerent piping, cordless remote control, and fresh air port etc. IDU shall have anticorrosive coating suitable for coastal area complete in all respects, to operate on 1- phase, 230V, 50Hz, AC input supply, consisting with any additional refrigerent and oil charged as per requirement during installation and connected to the system complete.				
<b>i</b>	1.0 Ton - 370 CFM	-	Nos.		
<b>ii</b>	1.5 Ton - 490 CFM	-	Nos.		
<b>iii</b>	2.0 Ton - 650 CFM	-	Nos.		
<b>iv</b>	2.5 Ton - 825 CFM	-	Nos.		
<b>v</b>	3.0 Ton - 950 CFM	-	Nos.		

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SR. NO.	DESCRIPTION OF ITEM	TOTAL QTY	UNIT	RATE RS.	AMOUNT RS.
4	<b>Supply of VRV/VRF based Ductable indoor unit size of nominal cooling capacity</b> having EERs per BEE standard and specification, suitable as per site requirement and indoor unit complete with in-built drainage arrangements, fan, refrigerant liquid and refrigerant piping. IDU shall have anticorrosive coating suitable for coastal area complete in all respects, to operate on 1- phase, 230V, 50Hz, AC input supply, consisting with any additional refrigerant and oil charged as per requirement during installation and connected to the system complete.				
i	6 Ton - 2400 CFM	12	Nos.		
5	<b>Supply of Cordless Remote control</b> having colour LCD panel, real time clock, temprature limitation (16 to 30 degree Cent.), functions like filter clean reminder timer suitable to communicate with wired controller complete.	86	Nos.		
6	<b>Supply of high pressure grade required size copper connection Y or T -joints / refnet</b> for liquid and suction line complete erected on wall / ceiling with supports/ raceways, nitrile rubber insulation, painting etc. with brazing and testing for leakage confirming the normal operation of the VRV/VRF air conditioning sysytem	80	Nos.		
7	<b>Supply of AHU kit &amp; related accessories</b> to connect VRF condensing unit to AHU coil.				
i	27000 CFM, 68 TR, 55 mm Static pr.	2	Nos.		
ii	8000 CFM, 20 TR, 55 mm Static pr.	2	Nos.		
iii	6000 CFM, 15 TR, 55 mm Static pr.	4	Nos.		
8	<b>Supply of centralised programmable remote control panel (HMI) touch manager controls</b> minimum 16 system of minimum 64 ODU's can be controlled and up to 992 IDU's can be individually mounted and controlled indoor units having minimum 200 mm size colour LCD touch panel, yearly scheduled, power propotional distribution function, temprature limitition, history function complete erected on wall with an arrangements to integrate with provided fire alarm sysytem.	5	Set		

**LOW SIDE BOQ**

HVAC BOQ		BOQ Rates			
SR. NO.	DESCRIPTION OF ITEM	TOTAL QTY	UNIT	RATE RS.	AMOUNT RS.
<b>1</b>	<b>Installation Testing &amp; Commissioning of VRV / VRF air conditioning system, out door unit (ODU) type-IV OEM standards working on HFCfree refrigerant R410A</b> or other required/ suitable green equivalent refrigerent, for cooling capacity delivering 100% at 43 deg. celcius and non stop cooling even at 56 deg. celcius and coefficient of performance (COP) 3.00 to 4.00, modular type horizontal/vertical hot air discharge suitable for total piping length upto 1000 meter operation in cooling mode with inverter based VRF/VRF technology microprocessor based control compressor starter / control panel complete with scroll compressor, air cooled anti corrosive copper condenser coil of suitable shape for increasing maximum heat transfer area, built in oil seperator, accumulator and oil receiver, copper tube alluminium fin air cooled condenser, condenser fan with motor suitable for 415V ± 10%, 50 Hz, 3 phase power supply, internal wiring and dirstcharge of refrigerent, etc. all housed in powder coated weather proof cabinete on provided angle iron frame or suitable foundation connected to the system in approved manner complete				
<b>i</b>	10 HP	4	Nos		
<b>ii</b>	12 HP	-	Nos		
<b>iii</b>	14 HP	1	Nos		
<b>iv</b>	16 HP	2	Nos		
<b>v</b>	18 HP	6	Nos		
<b>vi</b>	20 HP	15	Nos		
<b>vii</b>	22 HP	-	Nos		
<b>viii</b>	24 HP	2	Nos		
<b>ix</b>	28 HP	-	Nos		
<b>2</b>	<b>Installation Testing &amp; Commissioning of VRV/VRF based ceiling sususpended four way cassette indoor unit (IDU) compact/ standard size of nominal cooling capacity</b> having EERas per BEEstandard and specification, suitable as per site requirement with swing louvers and adjustable blades feome sides, indoor unit complete with in-built drainage arrangements, fan, refrigerant liquid and refrigerent piping, cordless remote control, and fresh air port etc. IDU shall have anticorrosive coating suitable for coastal area complete in all respects, to operate on 1- phase, 230V, 50Hz, AC input supply, consisting with any additional refrigerent and oil charged as per requirement during installation and connected to the system complete.				
<b>i</b>	1.0 Ton - 470 CFM	4	Nos		
<b>ii</b>	1.5 Ton - 490 CFM	16	Nos		
<b>iii</b>	2.0 Ton - 695 CFM	45	Nos		
<b>iv</b>	2.5 Ton - 825 CFM	-	Nos		
<b>v</b>	3.0 Ton - 1095 CFM	5	Nos		
<b>vi</b>	4.0 Ton - 1200 CFM	4	Nos		

HVAC BOQ			BOQ Rates		
SR. NO.	DESCRIPTION OF ITEM	TOTAL QTY	UNIT	RATE RS.	AMOUNT RS.
<b>3</b>	<b>Installation, Testing &amp; Commissioning of VRV/VRF based Hi-Wall indoor unit size of nominal cooling capacity</b> having EERas per BEE standard and specification, suitable as per site requirement with swing louvers and adjustable blades feome sides, indoor unit complete with in-built drainage arrangements, fan, refrigerant liquid and refrigerent piping, cordless remote control, and fresh air port etc. IDU shall have anticorrosive coating suitable for coastal area complete in all respects, to operate on 1- phase, 230V, 50Hz, AC input supply, consisting with any additional refrigerent and oil charged as per requirement during installation and connected to the system complete.				
<b>i</b>	1.0 Ton - 370 CFM	-	Nos		
<b>ii</b>	1.5 Ton - 490 CFM	-	Nos		
<b>iii</b>	2.0 Ton - 650 CFM	-	Nos		
<b>iv</b>	2.5 Ton - 825 CFM	-	Nos		
<b>v</b>	3.0 Ton - 950 CFM	-	Nos		
<b>4</b>	<b>Installation, Testing &amp; Commissioning of VRV/VRF based Ductable indoor unit size of nominal cooling capacity</b> having EERas per BEE standard and specification, suitable as per site requirement and indoor unit complete with in-built drainage arrangements, fan, refrigerant liquid and refrigerent piping. IDU shall have anticorrosive coating suitable for coastal area complete in all respects, to operate on 1- phase, 230V, 50Hz, AC input supply, consisting with any additional refrigerent and oil charged as per requirement during installation and connected to the system complete.				
<b>i</b>	6 Ton - 2400 CFM	12	Nos.		
<b>5</b>	<b>Installation,testing and commissioning centralised programmable remote control panel (HMI) touch manager controls</b> minimum 16 system of minimum 64 ODU's can be controlled and up to 992 IDU's can be individually mounted and controlled indoor units having minimum 200 mm size colour LCD touch panel, yearly scheduled, power propotional distribution function, temprature limitation, history function complete erected on wall with an arrangements to integrate with provided fire alarm ssystem.	5	Set		
<b>6</b>	<b>Supplying, laying / fixing, testing and commissioning of appropriate nominal refrigerent copper pipe</b> for liquid line / suction line supply and return piping and suitable guage ( hard drawn copper pipe for liquid lmain line and for refrigerent ) along with necessary supports, hangers, clamps, vibration isolaters and fitting such as bends, tees, valves gauge, strainer with insulation of 19 mm thick elastomeric nitrile rubber along with application of multicoating suitable for use with VRV/VRF piping for protection against mechanical damages, fungal growth, flame spread, water permeance and ultra violet radiations complete with OEM standards of VRV/VRF air conditioning system.	1,100	Rm		
<b>7</b>	Carrying out <b>core cutting</b> of size 3" to 5" dia x 15" length in the c.c./rock/stone wall with help of specialized core cutting machine in proper manner and finishing the site as original.	-	Nos		
<b>8</b>	Supply, Installtion of Covered <b>GI Cable Trays</b> for running exposed pipes in shafts / terrace including all supprorts for the trays.				
	300 mm x 40 x 40 x 1.6 mm thick	300	Rm		
	150 mm x 25 x 25 x 1.6 mm thick	150	Rm		

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SR. NO.	DESCRIPTION OF ITEM	TOTAL QTY	UNIT	RATE RS.	AMOUNT RS.
9	Supply, installation, testing and commissioning of 2c x 1.5 sqmm control cum transmission wiring/power/ <b>control cabling</b> with PVC insulated, PVC sheathed, multicore copper conductor control cable in suitable conduits between indoor and outdoor units	1,400	Rm		
10	Supply, installation, testing and commissioning of <b>condensate drain water piping</b> with necessary clamps, supports, hangers and fitting such as bend, tees, reducers etc. duly insulated with 9 mm thick chemically cross-linked closed cell polyethylene foam.				
i	65 mm	150	Rm		
ii	50 mm	300	Rm		
iii	40 mm	200	Rm		
iv	25 mm	150	Rm		
11	Supply and fixing of <b>MS Stand for Outdoor Units</b> . MS stand to be painted with red oxide & enamel paint.	30	Nos		
12	<b>Supply of Double Skin Air Handling Units Floor /Ceiling Mounted</b> Type as under, including blowers, filters, drive set, motors, cooling coils etc. Specifications enclosed separately. All the Motors shall be EFFClass 1. AHU Shall have SS drain pan, as per Equipment Schedule & Specifications. The VRF & AHU manufacturer should ensure that the coil will not freeze at reduced air quantity upto 30% of the designed flow.				
i	27000 CFM, 68 TR, 55 mm Static pr.	2	Nos		
ii	8000 CFM, 20 TR, 55 mm Static pr.	2	Nos		
iii	6000 CFM, 15 TR, 55 mm Static pr.	4	Nos		
13	<b>Installation &amp; Testing &amp; Commissioning of Double Skin Air Handling Units Floor /Ceiling Mounted</b> Type along with AHU Kit and related accessories as under, including blowers, filters, drive set, motors, cooling coils etc. Specifications enclosed separately. All the Motors shall be EFFClass 1. AHU Shall have SS drain pan, as per Equipment Schedule & Specifications. The VRF & AHU manufacturer should ensure that the coil will not freeze at reduced air quantity upto 30% of the designed flow.				
i	27000 CFM, 68 TR, 55 mm Static pr.	2	Nos		
ii	8000 CFM, 20 TR, 55 mm Static pr.	2	Nos		
iii	6000CFM, 20 TR, 55 mm Static pr.	4	Nos		
14	Supply, Fabrication, Installation & Testing of <b>GI Ducting Factory Fabricated</b> with T.D.Flange as per SMACNA Class-2 with conventional supports of full Threaded GI rods of required size. All Plenums to be made out of 18 G Only. Use of 26G sheets for duct fabrication not permitted). Ducts to be properly sealed along the Joints & Flanges with approved sealant from consultant, with Smoke leakage test. Plenums to be fabricated in 18G only. No slip joints allowed.				
i	24 G	2,250	Sqm		
ii	22 G	1,400	Sqm		
iii	20 G	450	Sqm		
iv	18 G	300	Sqm		

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SR. NO.	DESCRIPTION OF ITEM	TOTAL QTY	UNIT	RATE RS.	AMOUNT RS.
<b>15</b>	Supply, Fabrication, Installation & Testing of <b>GI Spiral Ducting Factory Fabricated</b> with T.D.Flange as per SMACNA Class-2 with neoprene rubber gasket splitter vanes conventional supports of full Threaded GI rods of required size. All Plenums to be made out of 18 G Only. Use of 26G sheets for duct fabrication not permitted). Ducts to be properly sealed along the Joints & Flanges with approved sealant with Smoke leakage test. Plenums to be fabricated in 18G only. No slip joints allowed.				
<b>i</b>	24 G	-	Sqm		
<b>ii</b>	22 G	-	Sqm		
<b>iii</b>	20 G	-	Sqm		
<b>iv</b>	18 G	-	Sqm		
<b>16</b>	Supply, Installation, Testing & Commissioning of 100 mm dia <b>preinsulated flexible duct</b> with end clamps and Aluminum foil on both side as required in various sizes as below. The duct shall fire retardant UL standard approved.	120	Rm		
<b>17</b>	Supply, Installation of an <b>air flow regulating valves / dampers in provided flexible or rigid duct / pipe of 100 mm size</b> with an alteration for existing flexible PVC pipe duct and necessary joints, sealing, coupling, complete at position.	74	Nos		
<b>18</b>	Supply, Installation of <b>coller damper</b> of galvanised iron material of upto 120 microns for anti corrosive resistance for supply air grill of required size	30	Sqm		
<b>19</b>	Supply, Installation, testing and commissioning of manually operated, opposed blade, duct mounted flanged <b>volume control damper of required size</b> in GI construction complete with operating mechanism, mounting arrangement, rubber refrigerent kits etc. complete.	50	Sqm		
<b>20</b>	Supply, Installation, Testing & commissioning of <b>Fire dampers</b> min 90 min rating,with fusible link & of GI Construction, as per the attached technical specifications.	15	Sqm		
<b>21</b>	Supply, Installation of extruded <b>AL. powder coated linear grill</b> of suitable size for width length without collar dampers having matching colour with the existing false ceiling and suitable deflection of 15/30/45 degree.	75	Sqm		
<b>22</b>	Supply, Installation, Testing & Commissioning of extruded <b>AL. powder coated Strip Line (Linear continuous) Diffuser</b> . The Sample & Colour to be approved by Architect before procurement by HVAC vendor. 3 Slot Linear Diffuser 150 mm wide.	25	Sqm		
<b>23</b>	Supplying & Installation of <b>tile type extruded AL. powder coated Modular diffuser</b> matching to the ceiling shade for provided supply and return air.	40	Sqm		
<b>24</b>	Supply, Installation, Testing & Commissioning of extruded AL powder coated Supply Air removable <b>core diffuser with damper with GI Terminal Box</b> properly Insulated with Nitrile Rubber of 19 mm thick & 1.2 m Insulated Flexible Duct with both side Al. Foil. Diffuser to be suitable as per false ceiling framing. Before procurement, Physical sample of diffuser to be approved by Client and Architect for colour and construction. Size: 600 mm x 600 mm (Neck Size:450 mm x 450 mm)	120	Nos		
<b>25</b>	Supply, Installation, Testing & Commissioning of AL. powder coated <b>Jet Nozzels</b> with Opposed Blade Volume Control Damper.				
<b>i</b>	300 mm dia	-	Nos		
<b>ii</b>	410 mm dia	-	Nos		

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SR. NO.	DESCRIPTION OF ITEM	TOTAL QTY	UNIT	RATE RS.	AMOUNT RS.
26	Supply,Installation,Testing & Commissioning of 150 mm <b>Disc Valve</b> . PVC / HDPE Material Only. (Ordering by HVAC vendor only after Approval of Technical Specifications & Colour shade of Physical sample by Consultant & Architect).	275	Nos		
27	Supply, Installation and Testing of <b>fresh/Exhaust air GI louvers</b> with bird screen complete as per specifications and drawings.	10	Sqm		
28	Supply & Installation of <b>Thermal insulation</b> with 19 mm nitrile rubber and providing adhesive thermal insulation for supply / return air duct having R-value as per the prevailing provisions in ECBC-2007. and approved by OEM & covering the same with 26 G Aluminium cladding, The insulation shall be class 'O" material.	2,500	Sqm		
29	Supply, Installation, Testing & Commissioning of <b>Accoustic Insulation</b> of duct with 15 mm thick Open Cell Nitrile Rubber with Anti Microbial Tratement & of Class '1' stuck inside the duct using rubber adhesives.(F.M. Approved). <b>Density of 140 - 180 Kg/m3.</b>	800	Sqm		
30	Supply, Installation, Testing & Commissioning of <b>Accoustic Insulation of False Ceiling</b> with 25 mm thick Open Cell Nitrile Rubber with Anti Microbial Treatment & of Class '1' stuck to the False Ceiling using adhesives. (F.M. Approved) Density of 140 - 180 Kg/m3.	200	Sqm		
31	Supply, Installation, Testing & Commissioning of <b>Underdeck Roof insulation</b> with 19 mm thick Nitrile rubber insulation with Aluminium foil on one side.	1,500	Sqm		
32	Supply,Installation, Testing and Commissioning fresh air intake ssystem, <b>ductable circular inline fresh air fan inlet unit having 300 cfm</b> capacity with maintaining the static pressure minimum 20 mm of Hg complete suitable to operate on 1ph, 230 v, 50Hz, A.C. supply.	5	Nos		
33	Supply, Installation, Testing & Commissioning of <b>Cabinet type Inline Fans</b> with DIDW forward cureved impeller fitted with maintenance free motor with EU – 4 Filter, confirming to technical specifications provided with the tender. Including double canvass connection (fire retardant). The fan shall have low sound level not exceding 40 DBA at three meter distance. Only Fresh Air fans to be provided with filters.				
i	4100 CFM - Exhaust Air	6	Nos		
ii	3000 CFM - Exhaust Air	2	Nos		
iii	1500 CFM - Exhaust Air	4	Nos		
iv	2000 CFM - Fresh Air	2	Nos		

**AMC BOQ**

<b>AMC BOQ</b>		<b>BOQ Rates</b>			
<b>SR. NO.</b>	<b>DESCRIPTION OF ITEM</b>	<b>TOTAL QTY</b>	<b>UNIT</b>	<b>RATE RS.</b>	<b>AMOUNT RS.</b>
<b>1</b>	Bidder shall indicate their Charges for the following Comprehensive preventive maintenance contract for the entire HVAC plant supplied by the AC Contractor inclusive of all parts and labour for all equipments supplied. Defective Liability Period is twelve months from the date of commissioning.				
<b>i</b>	1st Year	1	SET		
<b>ii</b>	2nd Year	1	SET		
<b>iii</b>	3 rd Year	1	SET		