

SCHEDULE/BILL OF QUANTITIES

Tender No: BHU/P&E/10/2024-25/29 DATED 08.10.2024

Name of the work: Tender Document for Revamping/ Remodelling of HVAC Plant of Existing LHO Building at Bhubaneswar, Odisha					
SR.	TRADE	SECTION		TENDER AMOUNT (in Rs.)	QUOTED AMOUNT (in Rs.)
1	INTERIOR HVAC WORKS	A		1,38,01,001.90	1,38,01,001.90
2	INFRA HVAC WORKS	B		60,41,238.43	60,41,238.43
Total HVAC		(A+B)		1,98,42,240.34	1,98,42,240.34

SECTION-A: INTERIOR HVAC WORKS

SR NO	DESCRIPTION	UNIT	TOTAL QTY	RATE (Rs.)	AMOUNT (Rs.)
1	INSULATED CHILLED WATER PIPING (Nitrile rubber insulation)				
	Supply, Installation, Teting and Commisioning of Chilled water duly insulated with following closed cell elastometric with Class "O" Nitrile rubber insulation m density, of minimum 45 kg/cu thermal conductivity 0.037 w/MK or better at 20 deg mean applied suitable adhesive, as per specification & as required complete in all respect				
	Note: The Pipes of sizes 150mm & below shall be M.S. 'C' class as per IS : 1239 and pipes size above 150mm shall be welded black steel pipe heavy class as per IS: 3589 Fe 410 grade. The cost shall inclusive of fittings, Puf sadels and required all Necessary GI supports etc. Condenser/ Chilled water piping complete with fittings, supports and all accesories with epoxy painting for weather protection.				
a	200 mm dia with 32 mm thick insulation -pipe 6.35 mm thickness	Rmt	100	5,007	500700
b	150 mm dia with 32 mm thick insulation	Rmt	2	3,820	7639
c	125 mm dia 32 mm thick insulation	Rmt	4	3,341	13364
d	100 mm dia 32 mm thick insulation	Rmt	20	2,661	53214
e	80 mm dia 32 mm thick insulation	Rmt	180	1,800	324000
f	65 mm dia 32 mm thick insulation	Rmt	4	1,602	6407
g	50 mm dia 32mm thick insulation	Rmt	60	1,387	83196
h	40 mm dia 32mm thick insulation	Rmt	5	1,122	5612
i	32 mm dia 19mm thick insulation	Rmt	55	935	51415
j	25 mm dia 19mm thick insulation	Rmt	80	776	62071
2	Supply, Installation, Testing and Commissioning of Insulated BUTTERFLY VALVE (MANUAL) with C I body SS Disc, Nitrile Rubber Seal & O- Ring PN 16 pressure rating for chilled water circulation as specified The valve shall be insulated as per chilled water pipe specification				
a	200 mm dia without insulation	Nos	1	12,560	12560
a	150 mm dia 32 mm thick insulation	Nos	1	7,440	7440
b	125 mm dia 32m m thick insulation	Nos	1	6,803	6803
c	100 mm dia 32 mm thick insulation	Nos	1	5,929	5929
d	80 mm dia 32 mm thick insulation	Nos	18	4,184	75311
e	65 mm dia 32 mm thick insulation	Nos	1	4,071	4071
f	50 mm dia 32mm thick insulation	Nos	1	3,687	3687
g	40 mm dia 32mm thick insulation	Nos	2	3,126	6252
3	Supply, Installation, Testing and Commissioning of Y-Type Strainer complete with MS body hot dip galvanized (Y-Strainer shall be fabricated out of MS 'C' Class pipe.) along with Flanges, Bolts, Nuts, Gaskets, Filter and drain cock. Permanent magnet shall be provided in the body of the strainer to arrest MS particles. Filter element shall be of non-magnetic 20 guage SS sheet with 3 mm dia perforation. Cartridge having five different type of filters made out of SS 304 with different mesh sizes shall be provided. PN 16 Rating.				
a	80 mm Dia		6	8,823	52939
b	40 mm Dia		1	2,598	2598
4	Supply, Installation, Testing and Commissioning of Ball Valve without Strainer. Valves shall be brass forged body construction with chrome plated brass ball and handle of stainless steel constructions. Its shall be suitable for PN 16 rating with Screwed end.				
a	32mm Dia	Nos	1	2,650.00	
b	25mm Dia	Nos	1	2,325.00	
c	20 mm Dia	Nos	16	1,850.00	29600
Automatic Air Vents					

SR NO	DESCRIPTION	UNIT	TOTAL QTY	RATE (Rs.)	AMOUNT (Rs.)
5	Supply, Intallation, Testing and Commisioning of Automatic Air Vents shall be installed at all high sections of piping as well as in the plant room piping. The discharge from this air vents shall be piped via copper tubes of appropriate size to the nearest waste drain pipe. The cost of Air Vent shall inclusive of ball valve.	Nos	16	2,168	34688
6	Thermometers - Dial Type - 4" Dia				
a	Supply, Intallation, Testing and Commisioning of Thermometers of approved make & shall be of mercury in steel type with range suitable for the temperature services. It should be installed in the thermowells as explained in the tender specifications.	Nos	46	931	42838
7	Bourdan Tube Pressure Guages				
a	Supply, Intallation, Testing and Commisioning of Pressure guages shall be of Bourdon (100 mm) type with range selected so that normal operation is near to middle of the scale. Syphons and cocks to be provided along with SS snubber.	Nos	46	1,068	49121
8.0	Insulated Condensate Drain Piping				
	Supply, Intallation, Testing and Commisioning of Insulated Condensate PVC Drain piping as per Inulation with Nitrile rubber Sheet / Tubler and "U" TRAP and "P" TRAP as per requirement				
a	50 mm dia 19mm thick insulation	Rmt	80	312.00	24960
b	40 mm dia 19mm thick insulation	Rmt	1	195.00	195
c	25 mm dia 19mm thick insulation	Rmt	30	122.00	3660
9	Supply, Installation, Testing and Commissioning of following sizes electronic, self-balancing, pressure independent type dynamical balancing valve with integrated 2 way modulating control valve in a single body. The actuator shall be capable of accepting upto 10V DC and upto 20mA electric signal and shall provide similar transduced feedback output to control system. Maximum close off pressure shall not be less than 6 Bar for upto 50 mm valves and 7 Bar for 65 mm & above. Valves should have pressure rating of 25 Bar minimum. The rate inclusive of Bypass line for Actuator.				
a	80 mm dia 25mm thick insulation	Nos	6	61,162	366970
b	65 mm dia 25mm thick insulation	Nos	1	48,055	48055
c	50 mm dia 19mm thick insulation	Nos	1	31,128	31128
d	40 mm dia 19mm thick insulation	Nos	1	28,397	28397
	Supply , installation , testing and commissioning of Floor Mounted / Ceiling suspended AHU's the following :				
10	Supply, Installation, Testing and commissioning of factory built floor / mounted / Ceiling suspended chilled water double skin type horizontal/vertical air handling units made of 48 mm thick panels consisting of pre plasticized G.I. casing of thickness 0.8mm outside layer and 0.8 mm inside layer with polyurethane foam (PUF) insulation factory injected between them by injection moulding machine, THERMAL BREAK PROFILE complete with DIDW FORWARD CURVE suitable for static pressure as required, minimum 2 bend GSS/PVC eliminators, cooling coil section with aluminium finned copper tubes (tubes thickness not less than 0.5mm) cooling coil of 6 row deep, filter section with 50mm thick 10 micron prefilters, belt drive package with TEFC drive motor of efficiency class IE3 and above suitable for 415 ± 10% volts, 50Hz, 3 Phase AC supply suitably designed for variable frequency drive applications, drain connections, stainless steel (18G) drain pan with PUF insulation, outlet of coil, auto purge valve wherever required, necessary vibration isolation arrangement etc. complete as per specification and of following capacities. The price inclusive of required capacity VFD Starter panel for AHU's. (Power and communication will required (Potential free contactor) for control valve thermostat, fire damper control panel and motorized damper control panel. above all are required with in the starter panel. Each 20 mtr (approx) cable also included in price.)				
	Filter element shall be of non-magnetic 20 guage SS sheet with 3 mm dia perforation. Pre-filter section shall be with non-woven synthetic media of 10 micron particle size with an efficiency of 90%, fine/microwave filter section will be with filters of non-woven synthetic media of 3 micron particle size of efficiency 99%.				
	Discharge Plenum Section to reduce discharge sound levels and to allow for flexibility in discharge.				
a	37 TR / 17000 CFM Capacity with 50 mm static Floor standing AHU	No	6	5,36,000.00	3216000
	TOILET VENTILATION SYSTEM				

SR NO	DESCRIPTION	UNIT	TOTAL QTY	RATE (Rs.)	AMOUNT (Rs.)
11	Supply, Intallation, Testing and Commiioning of Cabinet type Single skin ventilation unit with DIDW forward curved fan, three / Single phase motor and drive package for fan & canvass at unit outlet. The outlet Velocity of fan should be within 9.5 m/s. The noise level at a distance of 1.5 m from the fans to be within 65 dba. Supply air fan with Pre filter The motor hall be IE 3 and bove with Necessary cabling(20 Mtr), end terminations & earthing and starter panel also to be included.				
a	1000 cfm , 30 mm ESP For Toilet Exhaust	Nos	4	34,117	136469
b	500 cfm , 30 mm ESP For Toilet Exhaust	Nos	4	33,183	132730
c	250 CFM , 20 mm static (Circullar inline fan) for 6th floor directors toilets	Nos	1	26,640	26640
PRESSURIZATION AND PLANT ROOM VENTILATION SYSTEM					
TUBE AXIAL FANS for Pressurization					
12	Supply, installation, testing and commissioning of tube axial type axial fan shall be provided with TEFC Sq.cage, direct driven 'F' Class induction motor, IE2 Rating & suitable for 415V±10%, 50 Hz. 3 phase electric supply and capable to withstand 250 degree temperature for a minimum duration of 2 hours. The Fan must be selected for minimum power consumption & Maximum efficiency at respective duty point. Fan efficiency shall be not less than 75%. Noise level shall be 75 dBA at 3 meter in hemispherical reverberant room condition. Axial flow fans shall be provided with necessary vibration isolation arrangement.				
a	3000 CFM with 50 mm static For Basement Staircase Pressurization	Nos	2	63,561	127122
b	14000 CFM with 50 mm static For Lift Well Pressurization	Nos	2	1,14,971	229941
c	7000 CFM with 50 mm static For Lift Well Pressurization	Nos	1	82,255	82255
d	2000 CFM with 50 mm static For Basement Lift Lobby Pressurization	Nos	1	54,214	54214
BATTERY ROOM VENTILATION SYSTEM					
13	Supply, Installation, Testing and Commissioning of Flame proof type (with necessary supports arrangement). Rate shall be Lifting, shifting, assembling & positioning of the equipment comprising of the following and complete as per specification.				
	Flame proof circular inline fan with hi performace, minimun noise level. The fans shall be designed with anti static material and shall adhere to ATEX 94/9/EC directive. The flame proof enclosure shall comply with EN 60079 - 0/7, EN 14986, EN - 13463. Hydrogen sensor with dual display of gas concentration and set point / unit of gas, microcontroller based latest, accurate, reliable, and hi performance technology that eliminates false alarm. It should be programable linear 4-20mA / 20 - 4mA O/P with repect to gas concentration. The sensor should be suitable to work in hazardous area ATEX. IP 65 approved.				
	Fan motor shall be of IE-3 std. Fan shall have noise level shall be less than 78 dBA at a distance of 3.0 meter in hemispherical reverberant room condition. Vendor to supply fan starter & control panel mounted directly on unit/Wall mounted complete in all respect. The panel shall be of min. IP 55 Protection and must have arrangmnet to recive BMS & fire signal input. All integral power and control wiring for each component shall provided by OEM, only single point power supply and BMS connectivity shall be done by ELV team. The Fan must be selected for minimum power consumption & Maximum efficiancy at respective duty point. The price is inclusive of starter panel.				
a	1000 CFM with 40 mm static Exhaust Fan	Nos	1	57,000	57000
14	Supply, Intallation, Testing and Commissioning of Cabinet type Single skin ventilation unit with DIDW forward curved fan, three / Single phase motor and drive package for fan & canvass at unit outlet. The outlet Velocity of fan should be within 9.5 m/s. The noise level at a distance of 1.5 m from the fans to be within 65 dba. Supply air fan with Pre filter The motor hall be IE 3 and bove with Necessary cabling(20 Mtr), end terminations & earthing and starter panel also to be included.				
	800 cfm , 40 mm static Supply air fan	Nos	1	52,000	52000
Sheet Metal ducting					
15	Supply, installation, balancing and commissioning of factory fabricated GSS sheet metal rectangular/round ducting complete with neoprene rubber gaskets, elbows, splitter dampers, vanes, hangers, supports etc. as per approved drawings and specifications of following sheet thickness confirming to IS: 655, complete as required.				
a	24 G GI ducting -from 0-750 mm	Sqm	1600	964	1542857

SR NO	DESCRIPTION	UNIT	TOTAL QTY	RATE (Rs.)	AMOUNT (Rs.)
b	22 G GI ducting -from 751-1500 mm	Sqm	1160	1,128	1308107
c	20 G GI ducting -from 1501 to 2250 mm	Sqm	10	1,233	12330
	Insulation				
16	Supplying and fixing of following thickness closed cell Nitrile rubber (Class "O") insulation on existing duct after applying suitable adhesive for Nitrile rubber. The joints shall be sealed with 50 mm wide and 3 mm thick self adhesive nitrile rubber tape insulation complete as per specifications and as required				
a	19 mm thick	Sqm	2600	532.00	1383200
17	Supply, erection of Duct liner (Acoustic Insulation) of specified thickness of Open cell Elastomeric Rubber Insulation with antimicrobial protection manufactured as per ASTM E 84 test & which should also meet NFPA 90A supplementary materials for air distribution system which should not absorbs less 0.2% water by volume . Adhesive shall be of low VOC preferably Fevicol ac duct king optima / equivalent.				
a	10 mm Thick	Sqm	160	950.00	152000
	Supply, installation, testing and commissioning of following air terminal devices				
18	Volume control Damper				
a	Supply, installation, testing and commissioning of GI volume control duct damper complete with neoprene rubber gaskets, nuts, bolts, screws linkages, flanges etc, as per specifications.	Sqm	16	6,291	100657
19	Collar Damper				
a	Collar Damper of opposed blade type made out of Aluminum alloy extrusion with anodised matt black finish, in accordance with requirement.	Sqm	16	5,034	80544
20	Supplying & fixing of powder coated extruded aluminium Supply Air Grills with aluminium volume control dampers.	Sqm	24	8,129	195107
21	Supply of Aluminium powder coated Supply Air Diffusers with removable core and Damper as required with supports, fittings, accessories, etc., diffuser outer should be match with false ceiling grid (600X 600)	Nos	232	1,750.00	406000
22	Supply of Aluminium powder coated Return Air Diffusers with removable core and without Damper as required with supports, fittings, accessories, etc., diffuser outer should be match with false ceiling grid (600X 600)	Nos	224	1,125.00	252000
23	Heavy duct flexible double layer fire retardant canvas connection shall be provided at the outlet of AHU/CSU/EAU/FAU Fan and also for expansion joints. Quoted price should be inclusive of all flanges, joints, supports etc (Cross sectional area to be considered for measurement)	Sqm	10	2,350.00	23500
24	Supply,Installation, Testing and Commiioning of Aluminium powder coated Louver complete with VCD and bird screen with fixing arrangement etc..	Sqm	4	9,529.00	38116
25	Supply,Installation, Testing and Commisioning of Aluminium powder coated Exhaust disc valve with B.F.Damper 150 mm dia	No	74	945.00	69930
26	Supply and Installation of insulated flexible duct				
a	Flexible Duct 100 mm dia	Rmt	10	355.00	3550
b	Flexible Duct 150 mm dia	Rmt	160	438.00	70080
c	Flexible Duct 200 mm dia	Rmt	10	570.00	5700
27	Supply, Installation of Aluminium powder coated Non Vision Door transfer grill	Sqm	4	8,850.00	35400
28	Supply, Installation, Testing and Commissioning of Motorized fire and smoke dampers in supply air duct/main branch and return air path as and where required of required sizes i/c control wiring, the damper shall be motorized and spring return so as to close the damper in the event of power failure automatically and open the same in case of power being restored. The spring return action shall be inbuilt mechanism and not externally mounted. The damper shall also be closed in the event of fire signal complete as required and as per specifications. Fire Dampers shall be 90 min. rating against collapse & flame penetration as per UL 555 & 555S. Actuator should be UL listed; IP 54 protection & capable to withstand 75° C for 24 hrs.	Sqm	14	9,517	133238
29	Actuator	Nos	18	8,882	159879
	Desmanteling and Replacement works				

SR NO	DESCRIPTION	UNIT	TOTAL QTY	RATE (Rs.)	AMOUNT (Rs.)
30	Dismanteling and shifting of Existing AHU 6 Nos. knock down the all AHU panel, Removing of Blower, motor and Cooling coil. Removing of existing duct connection and canvas connection from AHU. Shifting AHU desmanteled items as per client requirement etc.. (The contractor should site visit and understand scope of work before quoting)	Lot	1	1,00,000.00	100000
31	Dismanteling of Existing Valve package with piping 6 Nos AHU's.(including starter panel) Disconnect the chilled water pipe connection from Existing AHU, Desmanteling the Existing Valve proper manner. Shifting of Desmanteled items as per client Requirement etc. (The contractor should site visit and understand scope of work before quoting)	Lot	1	80,000.00	80000
32	Dismantling of Existing 6 nos. AHU starter panels. & basement ventilation system etc. Disconnect the all cables from panel with proper manner and shifting of panel as per client requirement etc.. (The contractor should site visit and understand scope of work before quoting)	Lot	1	35,000.00	35000
33	Dismantling of existing Duct. from all 4 floors including AHU Room and all other area with proper manner and removing of existing supports like treaded rod support angle all other assasories and shift the all items as per client requirement etc. Cross check with current ducting layout incase existing duct whether re usable. (The contractor should site visit and understand scope of work before quoting)	Lot	1	50,000.00	50000
34	Dismanteling of Damaged Chilled water pipe & line Insulation. Where ever the insulation damaged that isulation will be dismanteled with proper manner etc.. and removing of existing supports like treaded rod support angle all other assasories and shift the all items as per client requirement etc (The contractor should site visit and understand scope of work before quoting)	Lot	1	50,000.00	50000
35	SITC of 3Phase, 4wire, 415V, 50hz Starter panel of 7.5 kw with VFD drive having MCB control ,contactor , ON/ OFF/TRIP Status, RYB phase indicating LED lights with Start Stop local push button, digital multifunction meter and all necessary accessories & fittings as required complete set. The Panel shall be made of CRCA sheet with powder coated. (for Existing AHU's 6 Nos)	Set	6	90,000.00	540000
36	Supply & laying of 1100v grade PVC Insulated cable of 6C x 2.5 Sq.mm Copper flexible Control cable laid on wallceiling,cable tray using cable tie, GI clamps & spacers as per the routes sown at site & further as directed by the architect, client at site (for AHU starter panel to basement centralized panel). The scope includes all termination, glanding ,& all accessories from stating to end. Cable shall be providing levelling & ferruelling with mettal identification tags showing size and loacation from to respective pannel & DB at Both ends.	RMT	2000	238.00	476000
LT CABLES & END TERMINATIONS					
37	Supply, laying , testing and commisioning of the following size XLPE insulated (1100V grade) aluminium / copper conductor armoured cable laid in cable tray / clamping in wall/ laid in the cable trench with suitable dressing tags and clamps.				
a	4C x 16 Sq.mm XLPE insulated Copper armoured cable	Rmt	5	921.00	4605
b	4C x 10 Sq.mm XLPE/PVC insulated Copper armoured cable from floor DB to Starter panel	Rmt	200	616.00	123200
c	4C x 6 Sq.mm XLPE/PVC insulated Copper armoured cable From starter panel to equipment	Rmt	250	408.00	102000
d	4C x 4 Sq.mm XLPE/PVC insulated Copper armoured cable For Ventilation fans / split units	Rmt	200	311.00	62200
e	4C x 2.5 Sq.mm XLPE/PVC insulated Copper armoured cable For Ventilation fans	Rmt	200	238.00	47600
f	4C x 1.5 Sq.mm XLPE/PVC insulated Copper armoured cable for Sensors	Rmt	500	170.00	85000
38	Supply, Installation, Teting and Commisioning of Emergency push button complete with GI powder coated box with fixing arrangements etc..	Nos	6	2,335.00	14010
SECTION-B: INFRA HVAC WORKS					
1	Condensor Piping for Cooling tower Circuit				

SR NO	DESCRIPTION	UNIT	TOTAL QTY	RATE (Rs.)	AMOUNT (Rs.)
	Supply, Installation, Testing and commissioning of MS "C" class Pipes duly painted with 1 coat primer and 2 coat enamel painting along with necessary clamps, angle, support, vibration isolator and fitting such as bend, tees etc. adequately supported on rigid supporter duly painted and laid above ground / Trench etc as per specification and as required complete in all respect. Note: The Pipes size 150 mm and below shall be M.S. 'C' class as per IS : 1239 and pipes size above 150 mm shall be welded black steel pipe heavy class as per IS: 3589, from minimum 6.35mm thick M.S. Sheet for pipes upto 350 mm dia. and from minimum 7mm thick MS sheet for pipes of 400 mm dia and above.				
a	400 mm dia -min. 7 mm thickness	Rmt	50	7,850.00	3,92,500.00
b	300 mm dia -min 6.35 mm thickness	Rmt	120	7,043	845142.86
c	250 mm dia - min 6.35 mm thickness	Rmt	54	5,940	320769.64
d	200 mm dia - min 6.35 mm thickness	Rmt	62	4,934	305903.57
e	100 mm dia	Rmt	50	2,403	120133.93
f	65 mm dia	Rmt	32	1,488.00	47,616.00
g	50mm dia	Rmt	12	1,215.00	14,580.00
2	Supply, Installation, Testing and Commissioning of BUTTERFLY VALVE (MANUAL) with C I body SS Disc, Nitrile Rubber Seal & O- Ring PN 16 pressure rating for chilled water circulation as specified.				
a	250mm dia	Nos	4	15,165.00	60,660.00
b	200mm dia	Nos	4	12,639	50557.14
c	100mm dia	Nos	4	4,832	19328.57
d	50mm dia	Nos	8	3,029	24235.71
3	Supply, Installation, Testing and Commissioning of Balancing VALVE (MANUAL) with CI body SS Disc, Nitrile Rubber Seal & O- Ring PN 16 pressure rating for chilled water circulation as specified.				
a	200mm dia	Nos	4	49,714.00	1,98,856.00
4	Supply, Installation, Testing and Commissioning of MS fabricated body Pot / Basket strainer (PN 10 rating) with SS 304 filter 40 mesh (Inlet area: Flow area as 1:4) for suction side of pumps complete with matching flanges, gaskets, galvanized fasteners.	Nos	1	92,500.00	92,500.00
5	Supply, Installation, Testing and Commissioning of Ball Valve without Strainer. Valves shall be brass forged body construction with chrome plated brass ball and handle of stainless steel constructions. Its shall be suitable for PN 16 rating with Screwed end.				
a	25mm dia	Nos	6	2,325.00	13,950.00
6	Supply. Intallation, Testing and Commissioning of Automatic Air Vents shall be installed at all high sections of piping as well as in the plant room piping. The discharge from this air vents shall be piped via copper tubes of appropriate size to the nearest waste drain pipe. The cost of Air Vent shall inclusive of ball valve.				
a	25mm dia Auto air vent	Nos	6	2,168	13,008.00
BASEMENT VENTILATION SYSTEM					
7	Supply, installation testing & commissioning of high temperature rated direct driven AMCA certified Smoke Spill Axial fan for Exhaust Air. Each fan shall be completed with inlet silencer and rated 250°C for 2 hours Class - H Motor suitable for 415+10% volts, 50 cycles , 3 phase AC supply. suitable starter and hanging arrangement included				
a	15000 CFM with 40 mm static pressure For lower Basement Exhaust	Nos	2	1,12,914	2,25,828
b	6000 CFM with 40 mm static pressure For lower Basement Exhaust	Nos	2	74,310	1,48,620
8	Supply of Ductless ventilation / Jet fans as per attached specifications for normal ventilation and Smoke Extraction along with silencers on both sides with min 900 mm length. The fan shall be suitable for 300 Deg C for 2 Hrs operations.Each fan shall be complete with dual speed motor and adjustable pitch die cast aluminium impeller.Casing shall be made of Hot dipped Galvanized steel. The motor shall be run on the electrical power suitable for 415V/3Ph/50Hz.				
a	3750 CFM on Normal mode and 7500 CFM on fire mode	Nos	4	1,18,709	4,74,838

SR NO	DESCRIPTION	UNIT	TOTAL QTY	RATE (Rs.)	AMOUNT (Rs.)
9	PLC panel for control of the Axial fans. The programmable logic controller shall be equipped with Auto/manual selector switch, user adjustable set points, required analog/digital input output cards, LCD display etc. The control panel shall be equipped with RS 485 interface which will enable the system to be monitored by BMS. The panel shall incorporate the starters for the jet vent fans and the control module for the jet vent fans. Each PLC panel shall incorporate the required number of relays for switching ON / OFF the Axial fans based on the signal from the CO sensors. The panels shall be looped to control the speed of the Main ventilation / exhaust fan.)The Panel shall be of IP 54 protection for indoor application.2) All the Construction, Controls, power Cabling, control cabling, Earthing shall be not less than as per latest standards and norms of the Indian and local regulation authority and as per tender specifications.3) The Panel shall be with casing, Incoming Main MCCB, Multi Data Meter (MDM-RS485, Kwh, Voltage, Amps etc), Phase indicators with key switch, ON, OFF, TRIP, Main insulated Bus bar, cable alley, Individual fan motor outgoing with starters etc.4) The Panel shall be of IP 54 protection for indoor application. The construction of outer casing shall be of GI sheet and powder coated with Siemens grey. The casing shall be of not less than 2mm thick, The gland plate shall be of not less than 3mm thick				
	. The Base frame shall be of not less than ISMC-75x40x5mm.5) The Aluminium Bus bar shall be adequately insulated and the size shall not be less than 1.2mm ² for 1Amps. And shall be of 35KA rated. 6) All the Individual Zones fans motor common outgoing with necessary MCCB/MCB, Starters, Contactors, Over load Relays, additional NO, NC points for controls, single phase preventer, phase reverse protection, Voltage unbalance protection, Phase indicators with key switch, ON, OFF, TRIP indicators, Auto / Manual selector switch, Earth leakage relays, necessary connectors for the termination of cables etc.,7) The Starters shall be suitable for the 2speed motor of Jet-vent fan. The Type & terminal connection shall be as per the motor selected by the fan manufacturer. 8) The Panel to be provided with additional NO/NC relay point for proper inter locking of the system. 9)The quoted price should inclusive any software & hardware & integrator required to provide open protocol output like Modbus-RTU / BACnet IP for the BMS monitoring. 10) The Panel to be provided with necessary MCB for each control circuit. Separate MCB with 24V transformer to be provided for the power connection to the PLC and CO sensor.11) BMS integration provision to be considered.	Nos	1	4,20,624.00	4,20,624.00
10	The SITC of CO sensors to gauge the level of carbon mono oxide in each zone.	Nos	2	12,800.00	25,600.00
11	Power & Control Cabling - 2C x 1 Sq.mm armoured cables in 19 mm FR PVC conduit for panel to CO sensors.	Rmt	300	185.00	55,500.00
PLANT ROOM VENTILATION SYSTEM					
TUBE AXIAL FANS for VENTILATION					
12	Fan shall be provided with TEFC Sq.cage, direct driven 'F' Class induction motor, IE2 Rating & suitable for 415V±10%, 50 Hz. 3 phase electric supply. The Fan must be selected for minimum power consumption & Maximum efficiency at respective duty point. & fan efficiency not less than 75%. Noise level shall be 75 dBA at 3 meter in hemispherical reverberant room condition.				
a	7500 CFM with 50 mm static For Chiller plant room Ventilation	Nos	2	90,200	1,80,400.96
b	3300 CFM with 50 mm static For Fire Pump room Ventilation	Nos	2	44,689	89,378.88
Sheet Metal ducting					
13	Supply, installation, balancing and commissioning of factory fabricated GSS sheet metal rectangular/round ducting complete with neoprene rubber gaskets, elbows, splitter dampers, vanes, hangers, supports etc. as per approved drawings and specifications of following sheet thickness complete as required.				
a	24 G GI ducting -from 0-750 mm	Sqm	300	964	289285.71
b	22 G GI ducting -from 751-1500 mm	Sqm	200	1,128	225535.71
c	20 G GI ducting -from 1501 to 2250 mm	Sqm	10	1,233	12330.36
Supply, installation, testing and commissioning of following air terminal devices					
14	Volume control Damper				
a	Supply, installation, testing and commissioning of GI volume control duct damper complete with neoprene rubber gaskets, nuts, bolts, screws linkages, flanges etc. as per specifications.	Sqm	3	6,291	18873.21
15	Collar Damper				

SR NO	DESCRIPTION	UNIT	TOTAL QTY	RATE (Rs.)	AMOUNT (Rs.)
a	Collar Damper of opposed blade type made out of Aluminum alloy extrusion with anodised matt black finish, in accordance with technical specifications.	Sqm	6	5,034.00	30204.00
16	Supplying & fixing of powder coated extruded aluminium Supply Air Grills with aluminium volume control dampers and complete with fixing arrangements etc..	Sqm	12	8,129	97553.57
17	Heavy duct flexible double layer fire retardant canvas connection shall be provided at the outlet of AHU/CSU/EAU/FAU Fan and also for expansion joints. Quoted price should be inclusive of all flanges, joints, supports etc (Cross sectional area to be considered for measurement)	Sqm	3	2,350.00	7050.00
18	Supply,Installation, Testing and Commiioning of Aluminium powder coated Louver complete with VCD and bird screen with fixing arrangement etc..	Sqm	6	9,529.00	57,174.00
Desmanteling and Replacement works					
19	Dismanteling of Existing Condenser water pipe. Dismantel in plant room, Chiller connection, main header, Pumps connection, basement, riser shaft and cooling tower area with proper manner and shifting of pipe and all items as per client requirement etc (The contractor should site visit and understand scope of work before quoting)	RMT	220	690.00	1,51,800.00
20	Dismanteling of Cooling tower base structure for 300 TR x 4 Nos capacity cooling tower. The contractor should submit Proper plan and schedule for approval from clien and Consultant Before Dismanteling. Required temporary support arrangement for cooling tower. This work to Consider Phase to Phase manor because of since working office cannot be full shutdown (The contractor should site visit and understand scope of work before quoting)	Lot	1	1,50,000.00	1,50,000.00
21	New Structural Platform for 300 TR X 4 Nos Cooling Tower's. The structural platformshould be as per site requirement like "C" chanel/ "I" beam, Angles, Bolt & Nuts etc.. All structural should be 1 coat of primer and 2 coat of corrosive resistance paint. This work to Consider Phase to Phase manor because of since working office cannot be full shutdown The contractor should be submit proposed structural drawing for approval from consulatant before fabrication.	Kgs	5000	145.00	7,25,000.00
22	MS Plate 3mm thickness for Platform work	Sqm	50	2,718.00	1,35,900.00
IMPORTANT NOTE :					
a	Supply and installation of Civil Foundation / Structural plat form / MS supports / transportation / lifting / shifting for all HVAC Equipments (AHU/Ventilation Fans/DX units/Ducting / pipes). Based on the project / site condition Same to be considered.				
b	Closure of Opening all around ducts with Cement Mortar & further covering all around the ducts with Fire Retardant Ceramic Wool spray. Based on the project / site condition same to be considered				
c	General Note : All equipments to be Bms compatable (AHU/DX Units/Fans/Actuator/Sensors/Panels)				
TOTAL AMOUNT FOR ENTIRE HVAC (SECTION A+ SECTION B)					1,98,42,240.34
Rate quoted in percentage (above/below/at par)		%	0		-00
Final quoted amount					1,98,42,240.34

Note: The rate quoted after offering percentage rate is inclusive of all statutory taxes, cess, octoroi, transportation for each item but excluding GST.