

HSCC/Safdarjung/Pkg-I/2013

Dated: 10.09.2013

To,

All Bidders

**Amendment-VII**

**Subject:- Package-I : Tender for Construction of Super Specialty cum New Paid Ward including Associated Services and Operation & Maintenance during Defect Liability Period at Safdarjung hospital, New Delhi.**

Dear Sir,

This has reference to the subject works,

The following AMMENDMENT-VII/CLARIFICATION-VII may be noted, which shall be treated as a part of the tender to be uploaded along with tender.

1. The revised cost summary sheet (PART-A & PART-B (Optional item)) is uploaded along with revised BOQ/estimate of HVAC works. **Bidders are requested to quote their percentage rates in the revised summary sheet only for PART-A & B considering this amendment.**
2. **The service tax is not applicable for subject tender works.**
3. **All bidders are requested to upload all the tender documents containing Volume- 1 to Volume-VI including all amendments ( I to VII)**
4. **Processing fee of Rs. 5618/- to be paid for participation of e-tender. To know the payment process, please see “Help Manuals” available on Home page of [the www.tenderwizard.com/hsc](http://www.tenderwizard.com/hsc).**

**All other terms and conditions of the tender shall remain unchanged.**

Prospective bidders are advised to regularly scan through HSCC web site as corrigendum/amendments etc., if any, will be notified on HSCC web site and separate advertisement will not be made for this.

Thanking you,

Yours faithfully,

(P.S.Rao)

Dy. General Manager (Civil)

**BILL OF QUANTITIES OF REVISED HVAC WORKS FOR SSB CUM PAID WARD BLOCK , SAFDARJUNG HOSPITAL, NEW DELHI**

Item No. 1	Description 2	Qty 3	Unit 4	Rate In Rs. ( in Figure) 5	Amount (Rs.) 7
The prices are to be quoted in the below mentioned form and shall include the supply, installation, testing & commissioning at site of all the equipments, ancillary materials as specified and all such items what so ever which may be required to fulfill the intent and purpose as laid					
The tenderer shall quote rates in figures and in words under column 5&6 and extend amount to column 7					
<b>Note:</b>	<b>All Equipment will be BMS Compatible with BACnet / MODbus protocol</b>				
<b>A)</b>	<b><u>EQUIPMENTS</u></b>				
<b>1.0</b>	<b>WATER CHILLING UNITS. (SSB Block)</b>				
1.1	Supply, Installation, Testing and Commissioning of water cooled centrifugal type Water chiller machines( ARI Certified imported) each having a capacity of 900 TR (actual) at chilled water inlet/outlet temperature of 12.22°C /6.6°C with chilled water circulation rate of 2160 USGPM (nominal) and condenser water inlet/outlet temprature of 32.2°C /37.8°C with circulation rate of 2700 USGPM (Nominal), suitable for operation on refrigerant R134a each comprising of the following complete as per specification and as required.				
a)	1 No.- centrifugal type compressor hermatic / semi hermatic / open, single/multistage type, automatic capacity control, safety switches, speed increasing gears, forced feed lubrication system etc. as per specifications.				

Item No. 1	Description 2	Qty 3	Unit 4	Rate In Rs. ( in Figure) 5	Amount (Rs.) 7
b)	1 No.- Suitable capacity squirrel cage induction motor with class 'F' insulation suitable for operation on 415±10% volts, 50 Hz A.C. supply.				
c)	1 No. Variable speed / frequency starter suitable for compressor motor complete with active armonic filters complying to IEEE519 or equivalent for hospitals, ammeter with CT's over load protection, under voltage protection against phase reversal and independent single phase preventors etc. complete with control wiring as required.				
d)	Necessary drive arrangement.				
e)	1 Set- Lubrication Device consisting of automatic electric oil pump, oil cooler, head tank, oil strainer, automatic oil pressure regulating valve, oil heater, oil heater thermal switch etc. and related controls.				
f)	1 No.- Matching shell and tube water cooled condenser of M.S. shell and integrally finned copper tubes with marine boxes.				
g)	1 No.- Matching shell and tube flooded type chiller of M.S. shell and integrally finned copper tubes and marine boxes.				
h)	1 Lot- refrigerant piping fittings, valve and accessories to inter connect compressor, condenser, chiller and expansion valve.				
i)	1 Set- Advanced Microprocessor based control pannel with automatic controls, coloured & graphical display, complete with accessories as per specifications.				
j)	Lot- Refrigerant line accessories comprising of safety valves, angle valve, liquid line indications, liquid levelcontrol etc.				
k)	Lot- water flow switches at inlet and outlet of condenser & chiller, water drain and air purge valves wherever required.				
l)	Lot- Thermal insulation on machine as required.				

Item No. 1	Description 2	Qty 3	Unit 4	Rate In Rs. ( in Figure) 5	Amount (Rs.) 7
m)	Lot- Frame work for mounting the above condenser, chiller, compressor and motor with base plate complete with antivibration pads/ springs.				
n)	Lot- Initial/First charge of refrigerant gas and compressor oil.				
o)	Max kW/TR - 0.66				
p)	C.O.P at ARI conditions > 6.3				
q)	Microprocessor based control panel complete with accessories as per specifications and BMS compatible BACNET / MODBUS Protocol				
	Chiller Fouling Factor : 0.0005 (FPS Unit)				
	Condenser Fouling Factor : 0.001 (FPS Unit)				
	<b>Complete water chilling machine as above.(4 W+1SB)</b>	4	Nos	19648449	78593796
1.2	<b>Plant Room Manager ( SSB Block)</b>				
	Plant room manager - Plant Room Manager for sequencing, remote monitoring, controlling and report generation of above equipments (5 # chillers, 5 # primary chilled water pumps, 5 # condenser water pumps & 5 CTs) . Selected controller shall have capability to meet detailed IO summary mentioned under specifications. Supervisory controller for management level interface in MS Enclosure SWG thickness, powder coated Siemens grey for Supervisory Controller, IO Cards (with accessories like Transformer, MCBs, internal wiring and Relays with bases). Workstation PC i5 computer 3000 Mhz with 500 GB hard disk, 21" TFT monitor, 104 windows key board, mouse, serial and parallel ports with laser colour printer. This must have software integration on chillers with 3rd party interface available on Bacnet including cabling & conduit work as required.	1	Lot	2254760	2254760

Item No. 1	Description 2	Qty 3	Unit 4	Rate In Rs. ( in Figure) 5	Amount (Rs.) 7
<b>2.0</b>	<b>WATER CIRCULATION PUMPS</b>				
<b>2.1</b>	<b>Primary Chilled Water Pumps</b>				
	Supply, installation, testing and commissioning of vertical split casing end suction type centrifugal chilled water pump sets factory assembled and tested for rated efficiency mounted on a common base frame etc each capable of delivering specified flow rate complete with following as per specifications & schedule of equipments.				
	a. Pump with IP 55 TEFC induction motor with class F insulation, EFF-1.				
	b. Channel base with vibration isolators, coupling, coupling guard etc.				
	c. Cladded insulation and anti corrosive coating inside and outside casing etc. of chilled water pump.				
	d. 2 Nos.- 150 mm dia dial type pressure gauge				
	e. Pumps shall be suitable for operation on 415+/- 10% Volts/ 3ph / 50 Hz/AC power supply.				
	The pump characteristic shall be as follows:				
	<b>For SSB Block</b>				
2.1.1	Water flow rate=2160 USGPM				
	Head = 14 Metre WC				
	<b>Primary chilled water pumps as described above.</b>	4	Nos	296598	1186392
<b>2.2</b>	<b>Secondary Pumps &amp; Variable Speed Pumping System</b>				

Item No. 1	Description 2	Qty 3	Unit 4	Rate In Rs. ( in Figure) 5	Amount (Rs.) 7
	Supply, installation, testing and commissioning of split casing type centrifugal chilled water recirculation pumps mounted on a common base etc each capable of delivering specified flow rate complete with following as per specifications & schedule of equipments.				
	a. Pump with IP 55 TEFC induction motor with class F insulation, EFF-1.				
	b. Channel base with vibration isolators, coupling, coupling guard etc.				
	c. Cladded insulation and anti corrosive coating inside and outside casing etc. of chilled water pump.				
	d. 2 Nos.- 150 mm dia dial type pressure gauge				
	e. Pumps shall be suitable for operation on 415+/- 10% Volts/ 3ph / 50 Hz/AC power supply.				
	f. The price will include control software and networking hardware and software for integration and compatibility with BMS (BACNET Protocol).				
	g. All pumps to be provided with separate VFD's (variable frequency drives). Control panel should also consist of cooling fan.				
	h. Electronic Differential Pressure Transmitters and PLC as required.				
	i. The cost will include making necessary flanged suction and delivery headers in C-Class MS				
	j. Complete set system to be mounted on a common MS base frame and shall follow following duty.				
	The pump characteristic shall be as follows:				
	<b>SSB Block</b>				

Item No. 1	Description 2	Qty 3	Unit 4	Rate In Rs. ( in Figure) 5	Amount (Rs.) 7
2.2.1	1600 USGPM				
	Head = 25 Metre WC				
	<b>Secondary chilled water pumps as described above.</b>	2	Nos	547490	1094980
2.2.2	1400 USGPM				
	Head = 25 Metre WC				
	<b>Secondary chilled water pumps as described above.</b>	2	Nos	467205	934410
2.2.3	1800 USGPM				
	Head = 25 Metre WC				
	<b>Secondary chilled water pumps as described above.</b>	2	Nos	381888	763776
2.3	<b>Condenser water Pumps</b>				
	Supply, installation, testing and commissioning of vertical split casing end suction type centrifugal pump sets factory assembled and tested for rated efficiency mounted on a common base frame etc each capable of delivering specified flow rate complete with following as per specifications & schedule of equipments.				
	a. Pump with IP 55 TEFC induction motor with class F insulation, EFF-1.				
	b. Channel base with vibration isolators, coupling, coupling guard etc.				
	c. Cladded insulation and anti corrosive coating inside and outside casing etc. of chilled water pump.				
	d. 2 Nos.- 150 mm dia dial type pressure gauge				
	e. Pumps shall be suitable for operation on 415+/- 10% Volts/ 3ph / 50 Hz/AC power supply.				

Item No. 1	Description 2	Qty 3	Unit 4	Rate In Rs. ( in Figure) 5	Amount (Rs.) 7
	The pump characteristic shall be as follows:				
	<b>SSB Block</b>				
2.3.1	Water flow rate=2700 USGPM				
	Head = 27 Metre WC				
	<b>Condenser water pumps as described above.</b>	4	Nos.	276299	1105196
2.4	<b>Hot water Pumps</b>				
	Supply, installation, testing and commissioning of vertical split casing type centrifugal hot water recirculation pump sets factory assembled and tested for rated efficiency mounted on a common base etc each capable of delivering specified flow rate complete with following as per specifications & schedule of equipments.				
	a. Pump with IP 55 TEFC induction motor with class F insulation, EFF-1.				
	b. Channel base with vibration isolators, coupling, coupling guard etc.				
	c. Cladded insulation and anti corrosive coating inside and outside casing etc. of chilled water pump.				
	d. 2 Nos.- 150 mm dia dial type pressure gauge				
	e. Pumps shall be suitable for operation on 415+/- 10% Volts/ 3ph / 50 Hz/AC power supply.				
	The pump characteristic shall be as follows:				
2.4.1	Water flow rate=250 USGPM (for SSB)				
	Head = 24 Metre WC				
	<b>Hot water pumps as described above.</b>	3	Nos	117616	352848



Item No. 1	Description 2	Qty 3	Unit 4	Rate In Rs. ( in Figure) 5	Amount (Rs.) 7
<b>3.0</b>	<b>COOLING TOWER (CTI Certified)</b>				
	Supply, installation, testing and commissioning of induced draft FRP type cooling towers for air conditioning system. Each tower shall be complete with distribution system, filling, louvers, steel ladder, fan , motor , VFD and VFD controller. Motor shall be IP 55 suitable for outdoor installation, 415±10% volts, 50 Hz, 3 phase power supply, Eff-1. Isolator enclosed in weather proof panel complete with earthing shall be included. Tower shall be selected on basis of water temperature 100 -90 degree F, ambient wet bulb 83 deg F .Cooling tower shall be compatible for working with BMS. Capacity shall be as follows:-				
3.1	1250 TR capacity , 2700 usgpm (min 04 cells in each)				
	<b>Cooling Tower as described above.</b>	4	Nos.	3172718	12690872
<b>4.0</b>	<b>Hot Water Generator</b>				
	Supply, installation, testing & commissioning of Electric Hot Water Generator for winter heating/monsoon reheating system. Hot water shall be with IP 55 protection and compatible with controls, sensors,controll cabling,piping and fittings,thermal insulation, BMS compatible with communication port, base frame etc. as per specifications.				
	<b>SSB Block</b>				
4.1	Capacity : 400 KW				
	Status : 3W				
	USGPM: 680				

Item No. 1	Description 2	Qty 3	Unit 4	Rate In Rs. ( in Figure) 5	Amount (Rs.) 7
	Temp IN/OUT : 110/125 DegF	3	Nos.	693472	2080416
4.2	Capacity : 250 KW Status : 1W+1S USGPM: 250				
	Temp IN/OUT : 110/125 DegF	2	Nos.	454192	908384
<b>5.0</b>	<b>AIR HANDLING UNITS</b>				
<b>5.1</b>	Supply, installation, testing and commissioning of draw through type Air Handling Units (double skin type) of horizontal /2-tier as specified & shown in schedule of equipment complete with the following :-				
	a. Fan Section and canvas connection, Mixing Box, Thermal break profile. (double skin type)				
	b. Centrifugal blower				
	c. Coil section with cooling coil, heating coils as per specifications.				
	d. Pre filters with filter section in all AHUs.				
	e. Fine and hepa filters with filter section wherever specifically specified as per AHU schedule .Wherever fine/hepa filters are specified, item shall include factory fabricated double skin plenum of same specifications as AHU panels and complete with filter frameworks.Fine/hepa filter section along with discharge plenum shall be part of AHU in upper tier.				
	f. Drain pan, drain connection.				
	g. Squirrel cage induction IP 55 TEFC , Insulation class 'F', Duty S1 , EFF-1 drive motor, drive arrangement, guard etc. All AHU motors shall be compatible for working with VFD.				

Item No. 1	Description 2	Qty 3	Unit 4	Rate In Rs. ( in Figure) 5	Amount (Rs.) 7
	h. Necessary vibration isolators & supporting arrangement.				
	i. Fresh air intake arrangement, necessary water drain & air purge valves wherever required etc.				
	j. Canvass connections,necessary foundations, 2 nos pressure gauge, 2 nos thermometer etc				
	k. Controls for AHUs comprising of a set of PN-16 rating <b>2 Way pressure independent dynamic balancing cum control valve of required size fitted with modulating actuators</b> having manual override facility on each AHU alongwith wiring for interconnections with 1.5 sq. mm Cu Conductor multicore armoured complete as required. The actuator shall have required shut off capability of minimum 4 bar rating. The acuator shall be compatible with BMS.The valve actuator shall be capable of accepting 2-10 volt DC, 4-20 mA electric signal and shall provide similar transduced feedback output signal to control system.				
	<b>SSB Block</b>				
	<b>Block -1</b>				
5.1.1	AH-BF-01 - 8500cfm/ 4RD Cooling Coil/45 mm static	1	Nos.	278117	278117
5.1.2	AH-BF-02 - 11000cfm/ 4RD Cooling Coil/50 mm static	1	Nos.	336030	336030
5.1.3	AH-BF-03 - 8500cfm/ 4RD Cooling Coil/45 mm static	1	Nos.	278117	278117
5.1.4	AH-BF-04 - 2500cfm/ 4RD Cooling Coil/80 mm static (with fine filter)	1	Nos.	194749	194749
5.1.5	AH-BF-05 - 3500cfm/ 4RD Cooling Coil/2 RD heating coil/80 mm static (with fine filter)	3	Nos.	249026	747078

Item No. 1	Description 2	Qty 3	Unit 4	Rate In Rs. ( in Figure) 5	Amount (Rs.) 7
5.1.6	AH-BF-06 - 5000cfm/ 4RD Cooling Coil/45 mm static	1	Nos.	192729	192729
5.1.7	AH-BF-07 - 6500cfm/ 4RD Cooling Coil/2 RD heating coil/80 mm static ( with pre fine filters)	1	Nos.	366737	366737
5.1.8	AH-BF-08 - 4400cfm/ 4RD Cooling Coil/45 mm static	2	Nos.	182763	365526
5.1.9	AH-BF-09 - 8500cfm/ 4RD Cooling Coil/2 RD heating coil/80 mm static ( with pre fine filters)	1	Nos.	435964	435964
5.1.10	AH-BF-10 - 6000cfm/ 4RD Cooling Coil/2 RD heating coil/80 mm static ( with pre fine filters)	1	Nos.	335491	335491
5.1.11	AH-BF-11 - 6000cfm/ 4RD Cooling Coil/2 RD heating coil/80 mm static ( with pre fine filters)	1	Nos.	335491	335491
5.1.12	AH-BF-12 - 11000cfm/ 4RD Cooling Coil/50 mm static	1	Nos.	336030	336030
5.1.13					
5.1.14	AH-GF-01 - 20000cfm/ 4RD Cooling Coil /2 RD heating coil/80 mm static ( with pre, fine filters)	1	Nos.	859941	859941
5.1.15	AH-GF-02 - 15500cfm/ 4RD Cooling Coil/50 mm static	1	Nos.	423573	423573
5.1.16	AH-FF-01 - 20000cfm/ 4RD Cooling Coil /50 mm static	1	Nos.	560813	560813
5.1.17	AH-FF-02 - 15500cfm/ 4RD Cooling Coil/50 mm static	1	Nos.	423573	423573
5.1.18	AH-SF-01, SF-02 - 3400 cfm/ 4RD Cooling Coil/ 2 RD Heating coil/80 mm static ( with pre & fine)	2	Nos.	244716	489432
5.1.19	AH-SF-03 - 3000 cfm/ 4RD Cooling Coil/ 2 RD Heating coil/80 mm static ( with pre, fine filters)	1	Nos.	225995	225995

Item No. 1	Description 2	Qty 3	Unit 4	Rate In Rs. ( in Figure) 5	Amount (Rs.) 7
5.1.20	AH-SF-04 - 1750cfm/ 4RD Cooling Coil / 2 RD Heating coil/80 mm static (with fine filter)	1	Nos.	182224	182224
5.1.21	AH-SF-05, 06, 07, 08 - 3150cfm/ 6RD Cooling Coil /2 RD heating Coil /135 mm static ( with pre, fine, Hepa filters)	4	Nos.	288487	1153948
5.1.22	AH-GF-01 - 13000cfm/ 4RD Cooling Coil /2 RD heating coil/80 mm static ( with pre, fine filters)	1	Nos.	586807	586807
5.1.23	AH-TF-01, 4F-01, 5F-01, 6F-01, 7F-01, 8F-01 - 11000cfm/ 4RD Cooling Coil /50 mm static	6	Nos.	336030	2016180
	<b>Block-2</b>				
5.1.24	AH-BF-01 - 21000cfm/ 4RD Cooling Coil /50 mm static	1	Nos.	584921	584921
5.1.25	AH-BF-02 - 11000cfm/ 4RD Cooling Coil/2 RD Heating coil /80 mm static (with fine filter)	1	Nos.	515291	515291
5.1.26	AH-BF-03 - 12000cfm/ 4RD Cooling Coil/2 RD Heating coil /55 mm static	1	Nos.	405391	405391
5.1.27	AH-GF-03 - 14000cfm/ 4RD Cooling Coil/50 mm static	1	Nos.	405391	405391
5.1.28	AH-GF-04 - 21000 cfm/ 4RD Cooling Coil/ 50 mm static	1	Nos.	584921	584921
5.1.29	AH-GF-05, GF-06 - 3000 cfm/ 6RD Cooling Coil/ 2 RD Heating coil/135 mm static ( with pre, fine, Hepa filters)	2	Nos.	287545	575090
5.1.30	AH-GF-07 - 5500 cfm/ 4RD Cooling Coil/45 mm static	1	Nos.	206332	206332
5.1.31	AH-GF-08 - 25000 cfm/ 4RD Cooling Coil/50 mm static	1	Nos.	680814	680814
5.1.32	AH-GF-09 - 15000 cfm/ 4RD Cooling Coil/50 mm static	1	Nos.	414415	414415

Item No. 1	Description 2	Qty 3	Unit 4	Rate In Rs. ( in Figure) 5	Amount (Rs.) 7
5.1.33	AH-FF-03 - 15000 cfm/ 4RD Cooling Coil/2 RD heating coil/80 mm static ( with pre & fine filter)	1	Nos.	658861	658861
5.1.34	AH-FF-04, 05 - 2700cfm/ 4RD Cooling Coil/ 2 RD Heating coil/80 mm static ( with pre, fine filters)	2	Nos.	220877	441754
5.1.35	AH-FF-06, FF-07 - 3100 cfm/ 6RD Cooling Coil/2 RD Heating coil /135 mm static (with pre, fine,Hepa filter)	2	Nos.	289161	578322
5.1.36	AH-FF-08, FF-09 - 4200 cfm/ 6RD Cooling Coil/2 RD Heating coil /135 mm static (with pre, fine,Hepa filter)	2	Nos.	340205	680410
5.1.37	AH-FF-10 - 4000 cfm/ 4RD Cooling Coil /2 RD heating coil/80 mm static ( with pre, fine filter)	1	Nos.	260743	260743
5.1.38	AH-FF-12 ,13, 14- 14000 cfm/ 4RD Cooling Coil/50 mm static	3	Nos.	418859	1256577
5.1.39	AH-FF-15 - 15000cfm/ 4RD Cooling Coil /50 mm static	1	Nos.	414415	414415
5.1.40	AH-SF-09 - 15000 cfm/ 4RD Cooling Coil/80 mm static (with fine filter)	1	Nos.	658861	658861
5.1.41	AH-SF-10, SF-11 - 2700cfm/ 4RD Cooling Coil/ 2 RD Heating coil/80 mm static ( with pre, fine filters)	2	Nos.	220877	441754
5.1.42	AH-SF-13, SF-14 - 3100 cfm/ 6RD Cooling Coil/2 RD Heating coil /135 mm static (with pre, fine,Hepa filter)	2	Nos.	289161	578322
5.1.43	AH-SF-15, SF-16 - 4200 cfm/ 6RD Cooling Coil/2 RD Heating coil /135 mm static (with pre, fine,Hepa filter)	2	Nos.	340205	680410
5.1.44	AH-SF-17 - 4000 cfm/ 4RD Cooling Coil /2 RD heating coil/80 mm static ( with pre, fine filter)	1	Nos.	260743	260743
5.1.45	AH-SF-18 - 11000 cfm/ 4RD Cooling Coil /2 RD heating coil/80 mm static ( with pre, fine filter)	1	Nos.	515291	515291
5.1.46	AH-SF-19 - 14000 cfm/ 4RD Cooling Coil/50 mm static	1	Nos.	405391	405391

Item No. 1	Description 2	Qty 3	Unit 4	Rate In Rs. ( in Figure) 5	Amount (Rs.) 7
5.1.47	AH-SF-20, SF-21- 15500cfm/ 4RD Cooling Coil /50 mm static	2	Nos.	423573	847146
5.1.48	AH-SF-22- 15000cfm/ 4RD Cooling Coil /50 mm static	1	Nos.	414415	414415
5.1.49	AH-TF-02 - 9500cfm/ 4RD Cooling Coil /2 RD heating coil/80 mm static ( with pre, fine filter)	1	Nos.	458859	458859
5.1.50	AH-TF-03 - 23500cfm/ 4RD Cooling Coil/50 mm static	1	Nos.	655360	655360
5.1.51	AH-4F-02 - 15000 cfm/ 4RD Cooling Coil/2 RD heating coil/80 mm static ( with pre & fine filter)	1	Nos.	658861	658861
5.1.52	AH-4F-03, 04 - 2700cfm/ 4RD Cooling Coil/ 2 RD Heating coil/80 mm static ( with pre, fine filters)	2	Nos.	220877	441754
5.1.53	AH-4F-06, FF-07 - 3100 cfm/ 6RD Cooling Coil/2 RD Heating coil /135 mm static (with pre, fine,Hepa filter)	2	Nos.	289161	578322
5.1.54	AH-4F-08, 4F-09 - 4200 cfm/ 6RD Cooling Coil/2 RD Heating coil /135 mm static (with pre, fine,Hepa filter)	2	Nos.	340205	680410
5.1.55	AH-4F-10 - 4000 cfm/ 4RD Cooling Coil /2 RD heating coil/80 mm static ( with pre, fine filter)	1	Nos.	260743	260743
5.1.56	AH-4F-12- 22500 cfm/ 4RD Cooling Coil/2 RD heating coil/80 mm static ( with pre, fine filter)	1	Nos.	951120	951120
5.1.57	AH-4F-13 - 15000cfm/ 4RD Cooling Coil /50 mm static	1	Nos.	414415	414415
5.1.58	AH-4F-14 - 5000cfm/ 4RD Cooling Coil /50 mm static	1	Nos.	192729	192729
5.1.59	AH-5F-02 - 15000 cfm/ 4RD Cooling Coil/2 RD heating coil/80 mm static ( with pre & fine filter)	1	Nos.	658861	658861

Item No. 1	Description 2	Qty 3	Unit 4	Rate In Rs. ( in Figure) 5	Amount (Rs.) 7
5.1.60	AH-5F-03 - 8000cfm/ 4RD Cooling Coil/45 mm static	1	Nos.	256029	256029
5.1.61	AH-5F-05- 23500 cfm/ 4RD Cooling Coil/2 RD heating coil/80 mm static ( with pre, fine filter)	1	Nos.	975901	975901
5.1.62	AH-5F-06- 12000 cfm/ 4RD Cooling Coil/2 RD heating coil/80 mm static ( with pre, fine filter)	1	Nos.	528220	528220
5.1.63	AH-5F-07 - 13000 cfm/ 4RD Cooling Coil /50 mm static	1	Nos.	373202	373202
5.1.64	AH-5F-08 - 5000cfm/ 4RD Cooling Coil /50 mm static	1	Nos.	192729	192729
5.1.65	AH-6F-02 - 15000 cfm/ 4RD Cooling Coil/2 RD heating coil/80 mm static ( with pre & fine filter)	1	Nos.	658861	658861
5.1.66	AH-6F-04- 24000 cfm/ 4RD Cooling Coil/2 RD heating coil/80 mm static ( with pre, fine filter)	1	Nos.	985060	985060
5.1.67	AH-6F-05- 8000 cfm/ 4RD Cooling Coil/50 mm static	1	Nos.	264784	264784
5.1.68	AH-6F-06- 12000 cfm/ 4RD Cooling Coil/2 RD heating coil/80 mm static ( with pre, fine filter)	1	Nos.	528220	528220
5.1.69	AH-6F-07 - 12500cfm/ 4RD Cooling Coil/50 mm static	1	Nos.	365660	365660
5.1.70	AH-7F-02 - 15500 cfm/ 4RD Cooling Coil/2 RD heating coil/80 mm static ( with pre & fine filter)	1	Nos.	665191	665191
5.1.71	AH-7F-03- 24000 cfm/ 4RD Cooling Coil/2 RD heating coil/80 mm static ( with pre, fine filter)	1	Nos.	985060	985060
5.1.72	AH-7F-04 - 7500cfm/ 4RD Cooling Coil/50 mm static	1	Nos.	251854	251854
5.1.73	AH-7F-05- 12000 cfm/ 4RD Cooling Coil/2 RD heating coil/80 mm static ( with pre, fine filter)	1	Nos.	528220	528220



Item No. 1	Description 2	Qty 3	Unit 4	Rate In Rs. ( in Figure) 5	Amount (Rs.) 7
5.1.74	AH-7F-06- 11000 cfm/ 4RD Cooling Coil/50 mm static	1	Nos.	336030	336030
5.1.75	AH-8F-02 - 10500 cfm/ 4RD Cooling Coil/50 mm static	1	Nos.	321080	321080
5.1.76	AH-8F-03- 28000 cfm/ 4RD Cooling Coil/2 RD heating coil/80 mm static ( with pre, fine filter)	1	Nos.	1192738	1192738
5.1.77	AH-8F-04 - 9000cfm/ 4RD Cooling Coil/50 mm static	1	Nos.	296838	296838
5.1.78	AH-8F-05- 14000 cfm/ 4RD Cooling Coil/2 RD heating coil/80 mm static ( with pre, fine filter)	1	Nos.	646067	646067
5.1.79	AH-8F-06- 13500 cfm/ 4RD Cooling Coil/50 mm static	1	Nos.	374010	374010
5.2	Supply, installation, testing and commissioning of <b>Heat Recovery Wheel</b> suitable for housing in AHUs mentioned above and conforming to standard specification. The capacity of Heat Recovery Wheel shall be as follows. The face velocity across HRW shall be 700 FPM				
	SSB Block				
5.2.1	3100 cfm	2	Nos.	715902	1431804
<b>5.3</b>	<b>CEILING SUSPENDED UNITS</b>				
	Supply, installation, testing and commissioning of draw through type Air Handling Units (double skin type) of ceiling suspended type as specified & shown in schedule of equipment complete with the following :-				

Item No. 1	Description 2	Qty 3	Unit 4	Rate In Rs. ( in Figure) 5	Amount (Rs.) 7
	a. Fan Section and canvas connection, Thermal break profile. (double skin type)				
	b. Centrifugal blower				
	c. Coil as per specifications.				
	d. Pre filters as required				
	e. Drain pan, drain connection.				
	f. Squirrel cage induction drive motor IP 55, TEFC , Insulation class 'F', Duty S1, EFF-1 drive arrangement, guard etc.All AHU motors shall be compatible for working with VFD.				
	g. Necessary vibration isolators & supporting arrangement.				
	h. Fresh air intake arrangement,necessary water drain & air purge valves wherever required etc.				
	i. Canvass connections,suspension arrangement, 2 nos pressure gauge, 2 nos thermometer etc				
	j. Controls for AHUs comprising of a set of PN-16 rating <b>2 Way pressure independent dynamic balancing cum control valve of required size fitted with modulating actuators</b> having manual override facility on each AHU alongwith wiring for interconnections with 1.5 sq. mm Cu Conductor multicore armoured complete as required. The actuator shall have required shut off capability of minimum 4 bar rating. The acuator shall be compatible with BMS.The valve actuator shall be capable of accepting 2-10 volt DC, 4-20 mA electric signal and shall provide similar transduced feedback output signal to control system.				
	<b>SSB Block</b>				
	<b>Block-1</b>				
5.3.1	CSU-BF-01 - 4000cfm/ 4RD Cooling Coil/40 mm static	1	Nos.	141819	141819

Item No. 1	Description 2	Qty 3	Unit 4	Rate In Rs. ( in Figure) 5	Amount (Rs.) 7
5.3.2	CSU-BF-02,03 , SF-01 3500cfm/ 4RD Cooling Coil/2RD heating coil/80 mm static ( with fine filter)	3	Nos.	268970	806910
	<b>Block-2</b>				
5.3.3	CSU-BF-01 - 4000cfm/ 4RD Cooling Coil/40 mm static	1	Nos.	164093	164093
5.3.4	CSU-FF-01 - 3500cfm/ 4RD Cooling Coil/40 mm static	1	Nos.	153964	153964
5.3.5	CSU-FF-02, SF-05 , 4F-05- 3000 cfm/ 4RD Cooling Coil/40 mm static	3	Nos.	139004	417012
5.3.6	CSU-FF-03, SF-02, 4F-11, 5F-04 - 3200cfm/ 4RD Cooling Coil/40 mm static	3	Nos.	149757	449271
5.3.7	CSU-SF-01 - 1200cfm/ 4RD Cooling Coil/40 mm static	1	Nos.	98331	98331
5.3.8	CSU-6F-03 - 4000cfm/ 4RD Cooling Coil/40 mm static	1	Nos.	164093	164093
5.3.9	TFA - 2500cfm/ 8RD Cooling Coil/2RD heating coil/80 mm static ( with fine filter)	6	Nos.	246374	1478244
<b>5.4</b>	<b>VAV Boxes</b>				
	Pressure independent variable air volume boxes complete with damper, differential pressure sensor, thermostat, damper actuator, controller capable of accepting signal from thermostat and output to damper actuator with silencer.VAV boxes shall be factory calibrated.Quoted price shall include motorised damper with actuator, cooling digital thermostat withon-off control, 24 V power supply unit,differential pressure sensor and required electrical/ control wiring to complete the commissioning.VAV boxes shall be suitable for following air flow capacities :-				
5.4.1	800 cfm	2	Nos.	80809	161618

Item No. 1	Description 2	Qty 3	Unit 4	Rate In Rs. ( in Figure) 5	Amount (Rs.) 7
5.4.2	1500 cfm	30	Nos.	101011	3030330
5.4.3	2100 cfm	5	Nos.	121213	606065
5.4.4	3500 cfm	20	Nos.	154884	3097680
<b>5.5</b>	<b>HEAT RECLAIM VENTILATION UNIT</b>				
	Supply, installation , testing and commissioning of heat reclaim ventilation with inlet and exhaust blower with fan (Inlet & exhaust) desiccant absorption material non contact seal, modular design with Aluminium supports of extruded section, galvanized steel plate casing, self extinguishable polyurethane foam insulation, multi-directional fibrous fleeces air filter including electric panel with cabling & earthing complete as per requirements.				
5.5.1	75% efficiency (F/A - 850 cfm & R/A 850 cfm)	40	Nos.	85000	3400000
<b>5.6</b>	<b>FAN COIL UNITS</b>				

Item No. 1	Description 2	Qty 3	Unit 4	Rate In Rs. ( in Figure) 5	Amount (Rs.) 7
	Supply, installation, testing and commissioning of horizontal type sheet metal ceiling suspended FCU's each complete with 3/4 row deep chilled water cooling coil of copper tubes aluminium fins construction, centrifugal fan, 3 speed motor, aluminium cleanable filters insulated condensate drain pan, coil piping connections, condensate drain connection, 2 way motorised cum automatic balancing valves provided with spring return function & fitted with modulating actuators in chilled water lines at each fan coil unit. The actuator shall have required shut off capability of minimum 4 bar rating and should be able to accept 24V power supply. The valves and actuator shall be compatible with BMS complete vibration isolator, wiring complete as required, with ball valve, ball valve with strainer as required as per specification & drawings with the following capacities:-				
5.6.1	1.0 TR	20	Nos.	19632	392640
5.6.2	1.5 TR	155	Nos.	21327	3305685
5.6.3	2.0 TR	21	Nos.	23799	499779
5.6.4	2.5 TR	94	Nos.	28743	2701842
<b>6.0</b>	Supply , installation , testing and commisioning of air cooled ( <b>Precision cooling</b> ) <b>split air conditioner</b> with scroll compressors suitable for 3 Phase 50 Hz AC supply comprising of the following.				
	a) Outdoor condensing Units				
	b) Indoor Evaporative Units with fine filters.				

Item No. 1	Description 2	Qty 3	Unit 4	Rate In Rs. ( in Figure) 5	Amount (Rs.) 7
	c) Interconnecting Refrigerant and drain piping with insulation wherever required, refrigerant and oil. The unit shall include refrigerant piping, power cabling and drain piping as required.				
	d) Safety and operational controls				
	e) The unit shall have advanced microcomputer controller with run time equalization, auto restart after power failure, fuzzy logic, self fault diagnostics .  The controller shall have 2 digit 7 segment LED display, LED indicators and touch key pad. The controller shall have faults and alarm display and it shall be mounted in fire retardant box. The equipment shall be equipped with humidity control.				
6.1	Capacity : 8.5 TR	4	Nos.	667927	2671708
6.2	Capacity : 5.5 TR	4	Nos.	501628	2006512
<b>7.0</b>	<b>Air Washer Unit</b>				
	Supply, installation, testing and commissioning of air washer units for air cooling work constructed as per detailed specifications and drawings, complete with 50mm thick prefilter, minimum 200mm deep celldeck pad, water circulating pump, DIDW centrifugal fan, TEFC squirrel cage induction motor V-belt & drive set vibration isolators, internal piping with class 'B' piping, quick fill, make up drain, overflow connection float valve etc. complete with all respects. Mounting frame of angle iron for floor / wall mounting. Price must include starter panel, cabling, control wiring, earthing etc.				

Item No. 1	Description 2	Qty 3	Unit 4	Rate In Rs. ( in Figure) 5	Amount (Rs.) 7
	Duty: Laundry ventilation				
7.1	25000 CFM with 50mm static pressure	1	No.	447388	447388
<b>8.0</b>	<b>Inline Fans/ Propeller Fans</b>				
8.1	Supply, installation, testing and commissioning of <b>Inline Fans</b> as shown in drawings and as per equipment schedule .Each fan shall be complete with centrifugal blowers, totally enclosed fan cooled motor. Fan motor shall be suitable for single phase, 220 +/- 6% V, 50 Hz AC supply. The casing of inline fans shall be acoustically lined & shall be selected for lower noise level. Fan motor shall have inbuilt speed controller. Item shall be complete with starter & cabling.				
	Inline Fans				
8.1.1	Duty: OT Defumigation				
	Air Quantity :500 CFM	14	Nos.	19292	270088
	Static Pressure :15 mm wg				
8.1.2	Duty: Toilet Exhaust				
	Air Quantity :1250 CFM	10	Nos.	27857	278570
	Static Pressure :20 mm wg				
8.1.3	Duty: Toilet Exhaust				
	Air Quantity :600 CFM	10	Nos.	19292	192920
	Static Pressure :20 mm wg				

Item No. 1	Description 2	Qty 3	Unit 4	Rate In Rs. ( in Figure) 5	Amount (Rs.) 7
8.1.4	Duty: Toilet Exhaust				
	Air Quantity :400 CFM	4	Nos.	18174	72696
	Static Pressure :20 mm wg				
8.1.5	Duty: Toilet Exhaust				
	Air Quantity :1350 CFM	6	Nos.	28323	169938
	Static Pressure :20 mm wg				
8.1.6	Duty: Toilet Exhaust				
	Air Quantity :900 CFM	14	Nos.	27451	384314
	Static Pressure :20 mm wg				
8.2	Supplying, installing, testing and commissioning of direct driven <b>Propeller fan</b> for exhaust air as shown in drawings. Each fan shall be complete with permanent split capacitor or shaded pole motor, mounting plate, accessories like wire guard, bird screen and fixed louvers for weather protection as required. Fan selection arrangement and Electrical characteristics shall be as follows:				
8.2.1	300 mm dia 900 RPM fan suitable for 220 +/- 10% volts, 50 Cycles, 1 Phase AC Supply	12	Nos	8170	98040
8.2.2	225 mm dia 900 RPM fan suitable for 220 +/- 10% volts, 50 Cycles, 1 Phase AC Supply	12	Nos	6173	74076
8.2.3	150 mm dia 900 RPM fan suitable for 220 +/- 10% volts, 50 Cycles, 1 Phase AC Supply	12	Nos	2500	30000
<b>9.0</b>	<b>Ventilation Fans</b>				



Item No. 1	Description 2	Qty 3	Unit 4	Rate In Rs. ( in Figure) 5	Amount (Rs.) 7
9.1	<b>Tube Axial Flow</b>				
	Supply, installation,testing and commisioning of tube axial flow fans as shown in drawings, Each fan shall be direct driven. Fan motor shall be suitable for 3 Phase, 415+/- 10% V, 50Hz AC supply .				
9.1.1	Duty: Lift well pressurisation				
	Air Quantity : 9000 CFM				
	Static Pressure : 25 mm wg	15	No.	86785	1301775
9.1.2	Duty: Lift lobby pressurisation				
	Air Quantity : 7500 CFM				
	Static Pressure : 25 mm wg	6	No.	72303	433818
9.2	<b>Centrifugal Fans</b>				
	Supply, installation, testing and commissioning of double width double inlet class I <b>CENTRIFUGAL FANS</b> for ventilation system. Each fan shall be complete with TEFC type IP 55 motor with class F insulation, belt drive, pulley mounted on motor & fan shaft, belt guard, motor mount, casing and vibration isolators as per specifications and shop drawings.All expose fan shall be covered with GI housing as per approved shop drawings to protect fan and motors from weather.Fan motor shall be suitable for 3 Phase, 415+/- 10% V, 50Hz AC supply . Fan shall be complete with gravity louvers.				
	<b>SSB Block</b>				

Item No. 1	Description 2	Qty 3	Unit 4	Rate In Rs. ( in Figure) 5	Amount (Rs.) 7
	<b><u>2nd &amp; 3rd Basement ( for fresh air)</u></b>				
9.2.1	Air Quantity : 33000 CFM Static Pressure : 25 mm wg	2	Nos.	359661	719322
9.2.2	Air Quantity : 49000 CFM Static Pressure : 25 mm wg	2	Nos.	612039	1224078
9.2.3	Air Quantity : 40000 CFM Static Pressure : 25 mm wg	4	Nos.	596174	2384696
9.2.4	Air Quantity : 60000 CFM Static Pressure : 25 mm wg	4	Nos.	893739	3574956
9.2.5	Air Quantity : 21000 CFM Static Pressure : 25 mm wg	2	Nos.	254737	509474
9.2.6	Air Quantity : 31000 CFM Static Pressure : 25 mm wg	2	Nos.	323064	646128
9.2.7	Air Quantity : 26000 CFM Static Pressure : 25 mm wg	2	Nos.	310997	621994
9.2.8	Air Quantity : 39000 CFM	2	Nos.	371205	742410

Item No. 1	Description 2	Qty 3	Unit 4	Rate In Rs. ( in Figure) 5	Amount (Rs.) 7
	Static Pressure : 25 mm wg				
9.2.9	Air Quantity : 25000 CFM	2	Nos.	310997	621994
	Static Pressure : 25 mm wg				
9.2.10	Air Quantity : 38000 CFM	2	Nos.	359661	719322
	Static Pressure : 25 mm wg				
9.2.11	Air Quantity : 38000 CFM	2	Nos.	359661	719322
	Static Pressure : 25 mm wg				
9.2.12	Air Quantity : 57000 CFM	2	Nos.	859823	1719646
	Static Pressure : 25 mm wg				
9.2.13	Air Quantity : 24000 CFM	2	Nos.	261440	522880
	Static Pressure : 25 mm wg				
9.2.14	Air Quantity : 36000 CFM	2	Nos.	359661	719322
	Static Pressure : 25 mm wg				
9.2.15	Air Quantity : 30000 CFM	4	Nos.	323064	1292256
	Static Pressure : 25 mm wg				
9.2.16	Air Quantity : 45000 CFM	4	Nos.	612039	2448156

Item No. 1	Description 2	Qty 3	Unit 4	Rate In Rs. ( in Figure) 5	Amount (Rs.) 7
	Static Pressure : 25 mm wg				
9.2.17	Air Quantity : 42000 CFM	2	Nos.	612039	1224078
	Static Pressure : 25 mm wg				
9.2.18	Air Quantity : 63000 CFM	2	Nos.	904911	1809822
	Static Pressure : 25 mm wg				
9.2.19	Air Quantity : 36000 CFM	4	Nos.	359661	1438644
	Static Pressure : 25 mm wg				
9.2.20	Air Quantity : 54000 CFM	4	Nos.	807163	3228652
	Static Pressure : 25 mm wg				
	<b>Basement-1</b>				
9.2.21	Air Quantity : 24000 CFM	1	Nos.	261440	261440
	Static Pressure : 25 mm wg				
9.2.22	Air Quantity : 36000 CFM	1	Nos.	359661	359661
	Static Pressure : 25 mm wg				
9.2.23	Air Quantity : 45000 CFM	1	Nos.	612039	612039
	Static Pressure : 25 mm wg				

Item No. 1	Description 2	Qty 3	Unit 4	Rate In Rs. ( in Figure) 5	Amount (Rs.) 7
9.2.24	Air Quantity : 67000 CFM	1	Nos.	904911	904911
	Static Pressure : 25 mm wg				
9.2.25	Air Quantity : 60000 CFM	1	Nos.	893739	893739
	Static Pressure : 25 mm wg				
9.2.26	Air Quantity : 45000 CFM	2	Nos.	612039	1224078
	Static Pressure : 25 mm wg				
9.2.27	Air Quantity : 35000 CFM	1	Nos.	359661	359661
	Static Pressure : 25 mm wg				
9.2.28	Air Quantity : 52000 CFM	1	Nos.	807163	807163
	Static Pressure : 25 mm wg				
9.2.29	Air Quantity : 23000 CFM	1	Nos.	261440	261440
	Static Pressure : 25 mm wg				
9.2.30	Air Quantity : 34000 CFM	1	Nos.	359661	359661
	Static Pressure : 25 mm wg				
9.2.31	Air Quantity : 32000 CFM	1	Nos.	359661	359661
	Static Pressure : 25 mm wg				

Item No. 1	Description 2	Qty 3	Unit 4	Rate In Rs. ( in Figure) 5	Amount (Rs.) 7
9.2.32	Air Quantity : 48000 CFM	1	Nos.	612039	612039
	Static Pressure : 25 mm wg				
9.2.33	Air Quantity : 16000 CFM	1	Nos.	191251	191251
	Static Pressure : 25 mm wg				
9.2.34	Air Quantity : 24000 CFM	1	Nos.	261440	261440
	Static Pressure : 25 mm wg				
9.2.35	Air Quantity : 23000 CFM	1	Nos.	261440	261440
	Static Pressure : 25 mm wg				
9.2.36	Air Quantity : 34000 CFM	1	Nos.	359661	359661
	Static Pressure : 25 mm wg				
9.2.37	Air Quantity : 41000 CFM	2	Nos.	612039	1224078
	Static Pressure : 25 mm wg				
9.2.38	Air Quantity : 61500 CFM	2	Nos.	904911	1809822
	Static Pressure : 25 mm wg				
9.2.39	Air Quantity : 48000 CFM	2	Nos.	612039	1224078
	Static Pressure : 25 mm wg				

Item No. 1	Description 2	Qty 3	Unit 4	Rate In Rs. ( in Figure) 5	Amount (Rs.) 7
<b>9.3</b>	<b>Vane Axial Fans (Fire rated)</b>				
	Supply, installation,testing and commisioning of tube axial flow fans as shown in drawings, Each fan shall be direct driven.. Fan motor shall be suitable for 3 Phase, 415+/- 10% V, 50Hz AC supply with IP 55 protection, class 'H' insulation and EFF-1 class. Fan shall be complete with gravity louvers. Fan shall be 250 deg C, 2hrs fire rated.				
	<b>SSB Block</b>				
	<b>Ist Basement</b>				
9.3.1	Air Quantity : 12000 CFM, 25 mm st. pr.	2	Nos.	104055	208110
9.3.2	Air Quantity : 18000 CFM, 25 mm st. pr.	2	Nos.	145543	291086
9.3.3	Air Quantity : 22500 CFM, 25 mm st. pr.	2	Nos.	176081	352162
9.3.4	Air Quantity : 33500 CFM, 25 mm st. pr.	2	Nos.	229114	458228
9.3.5	Air Quantity : 30000 CFM, 25 mm st. pr.	2	Nos.	229114	458228
9.3.6	Air Quantity : 33500 CFM, 25 mm st. pr.	2	Nos.	229114	458228
9.3.7	Air Quantity : 30000 CFM, 25 mm st. pr.	2	Nos.	229114	458228

Item No. 1	Description 2	Qty 3	Unit 4	Rate In Rs. ( in Figure) 5	Amount (Rs.) 7
9.3.8	Air Quantity : 45000 CFM, 25 mm st. pr.	2	Nos.	475732	951464
9.3.9	Air Quantity : 17500 CFM, 25 mm st. pr.	2	Nos.	145543	291086
9.3.10	Air Quantity : 26000 CFM, 25 mm st. pr.	2	Nos.	209152	418304
9.3.11	Air Quantity : 11500 CFM, 25 mm st. pr.	2	Nos.	104055	208110
9.3.12	Air Quantity : 17000 CFM, 25 mm st. pr.	2	Nos.	122676	245352
9.3.13	Air Quantity : 16000 CFM, 25 mm st. pr.	2	Nos.	122676	245352
9.3.14	Air Quantity : 24000 CFM, 25 mm st. pr.	2	Nos.	176081	352162
9.3.15	Air Quantity : 16000 CFM, 25 mm st. pr.	1	Nos.	122676	122676
9.3.16	Air Quantity : 12000 CFM, 25 mm st. pr.	2	Nos.	104055	208110
9.3.17	Air Quantity : 11500 CFM, 25 mm st. pr.	2	Nos.	104055	208110
9.3.18	Air Quantity : 17000 CFM, 25 mm st. pr.	2	Nos.	122676	245352



Item No. 1	Description 2	Qty 3	Unit 4	Rate In Rs. ( in Figure) 5	Amount (Rs.) 7
9.3.19	Air Quantity : 41000 CFM, 25 mm st. pr.	2	Nos.	377049	754098
9.3.20	Air Quantity : 61500 CFM, 25 mm st. pr.	2	Nos.	575665	1151330
9.3.21	Air Quantity : 16500 CFM, 25 mm st. pr.	2	Nos.	122676	245352
9.3.22	Air Quantity : 25000 CFM, 25 mm st. pr.	2	Nos.	176081	352162
9.3.23	Air Quantity : 20000 CFM, 25 mm st. pr.	2	Nos.	158428	316856
9.3.24	Air Quantity : 30000 CFM, 25 mm st. pr.	2	Nos.	229114	458228
9.3.25	Air Quantity : 25000 CFM, 25 mm st. pr.	2	Nos.	176081	352162
9.3.26	Air Quantity : 38000 CFM, 25 mm st. pr.	2	Nos.	377049	754098
9.3.27	Air Quantity : 28000 CFM, 25 mm st. pr.	2	Nos.	229114	458228
9.3.28	Air Quantity : 42000 CFM, 25 mm st. pr.	2	Nos.	377049	754098
	<b>2nd &amp; 3rd Basement</b>				
9.3.29	Air Quantity : 16500 CFM, 25 mm st. pr.	4	Nos.	122676	490704

<b>Item No. 1</b>	<b>Description 2</b>	<b>Qty 3</b>	<b>Unit 4</b>	<b>Rate In Rs. ( in Figure) 5</b>	<b>Amount (Rs.) 7</b>
9.3.30	Air Quantity : 24500 CFM, 25 mm st. pr.	4	Nos.	176081	704324
9.3.31	Air Quantity : 20000 CFM, 25 mm st. pr.	8	Nos.	158428	1267424
9.3.32	Air Quantity : 30000 CFM, 25 mm st. pr.	8	Nos.	229114	1832912
9.3.33	Air Quantity : 10500 CFM, 25 mm st. pr.	4	Nos.	83348	333392
9.3.34	Air Quantity : 15500 CFM, 25 mm st. pr.	4	Nos.	122676	490704
9.3.35	Air Quantity : 13000 CFM, 25 mm st. pr.	4	Nos.	108152	432608
9.3.36	Air Quantity : 19500 CFM, 25 mm st. pr.	4	Nos.	145543	582172
9.3.37	Air Quantity : 12500 CFM, 25 mm st. pr.	4	Nos.	104055	416220
9.3.38	Air Quantity : 19000 CFM, 25 mm st. pr.	4	Nos.	145543	582172
9.3.39	Air Quantity : 19000 CFM, 25 mm st. pr.	4	Nos.	145543	582172
9.3.40	Air Quantity : 28500 CFM, 25 mm st. pr.	4	Nos.	229114	916456

Item No. 1	Description 2	Qty 3	Unit 4	Rate In Rs. ( in Figure) 5	Amount (Rs.) 7
9.3.41	Air Quantity : 12000 CFM, 25 mm st. pr.	4	Nos.	104055	416220
9.3.42	Air Quantity : 18000 CFM, 25 mm st. pr.	4	Nos.	145543	582172
9.3.43	Air Quantity : 15000 CFM, 25 mm st. pr.	4	Nos.	122676	490704
9.3.44	Air Quantity : 22500 CFM, 25 mm st. pr.	4	Nos.	176081	704324
9.3.45	Air Quantity : 21000 CFM, 25 mm st. pr.	4	Nos.	68153	272612
9.3.46	Air Quantity : 31500 CFM, 25 mm st. pr.	4	Nos.	229114	916456
9.3.47	Air Quantity : 15000 CFM, 25 mm st. pr.	4	Nos.	122676	490704
9.3.48	Air Quantity : 22500 CFM, 25 mm st. pr.	4	Nos.	176081	704324
9.3.49	Air Quantity : 18000 CFM, 25 mm st. pr.	8	Nos.	145543	1164344
9.3.50	Air Quantity : 27000 CFM, 25 mm st. pr.	8	Nos.	209152	1673216
<b>10.0</b>	<b>EXPANSION TANK</b>				

Item No. 1	Description 2	Qty 3	Unit 4	Rate In Rs. ( in Figure) 5	Amount (Rs.) 7
	Supply, installation, testing and commissioning of pressurised PVC, expansion tank of following capacities made of PVC 2 layer sheet complete with 50 mm thick fire retardant type 32 kg/mt cu density TF quality expanded polystyrene insulation finished with two layers of sand cement plaster and painted complete with vent, drain connections , float valve, quick fill connection, manhole cover etc as specified. (Of double layered Sintex or equivalent make).				
10.1	5000 ltrs.	1	No.	150000	150000
10.2	2000 ltrs.	1	No.	64041	64041
<b>11.0</b>	<b>Air purification systems</b>				
11.1	<b><u>PHI SYSTEM</u></b>				
	Supply, Installation , testing , commissioning and handing over of the imported Photohydroionisation ( PHI) System for maintaining indoor Air Quality.The System must be UL listed for fire safety. The components of the system must be in strict conformity with the specifications.and shall be including freight , Insurance etc. as required . The prices to include all inter connected wiring and safety controls between the PHI systems.				
11.1.1	For OTs	18	Set	242853	4371354
11.1.2	For Wards	22	Set	238718	5251796

Item No. 1	Description 2	Qty 3	Unit 4	Rate In Rs. ( in Figure) 5	Amount (Rs.) 7
11.2	Supply, installation testing and commissioning of the <b>Ozone Injection System</b> for maintaining indoor quality comprising of duct mounted ozone generators, VOC sensor, controller. Wiring between the Ozone monitor / switch and controller complete as per specification and the air handling capacities as under:-				
11.2.1	For Public toilets	12	Set	200000	2400000
<b>B)</b>	<b><u>PIPING</u></b>				
<b>12.0</b>	<b>CONDENSER WATER PIPING &amp; VALVES</b>				
	Supply, laying/fixing, testing and commissioning of M.S. heavy class ERW piping confirming to IS : 3589/IS:1239 with necessary clamps, supports, anti vibration mountings, hangers and fittings such as bends, tees, reducers etc. duly painted as per specifications :				
12.1	600 mm dia	280	RM	14000	3920000
12.2	500 mm dia	50	RM	12486	624300
12.3	450 mm dia	50	RM	11107	555350
12.4	400 mm dia	50	RM	9456	472800
12.5	350 mm dia	250	RM	4508	1127000
12.6	300 mm dia	100	RM	4099	409900

Item No. 1	Description 2	Qty 3	Unit 4	Rate In Rs. ( in Figure) 5	Amount (Rs.) 7
12.7	250 mm dia	60	RM	3464	207840
12.8	200 mm dia	50	RM	2732	136600
12.9	150 mm dia	80	RM	1846	147680
12.10	125 mm dia	60	RM	1553	93180
12.11	100 mm dia	50	RM	1260	63000
12.12	50 mm dia	50	RM	536	26800
12.13	40 mm dia	50	RM	391	19550
<b>13.0</b>	<b>Valves</b>				
13.1	<b>Butterfly valves : ( PN16)</b>				
	Supply, fixing and testing of following valves, strainers, in the chilled water piping complete with companion flanges, nut bolts, gaskets, supports etc. duly insulated and painted as per specifications:				
13.1.1	600 mm dia.	2	Nos	113605	227209
13.1.2	500 mm dia.	2	Nos	95622	191244
13.1.3	450 mm dia.	0	Nos	95622	0
13.1.4	350 mm dia.	30	Nos	73104	2193124
13.1.5	250 mm dia.	8	Nos	18727	149818
13.1.6	200 mm dia.	4	Nos	15083	60333
13.1.7	150 mm dia.	1	Nos	4332	4332

Item No. 1	Description 2	Qty 3	Unit 4	Rate In Rs. ( in Figure) 5	Amount (Rs.) 7
13.1.8	125 mm dia.	4	Nos	3994	15975
13.1.9	50 mm dia.	5	Nos	1895	9476
13.1.10	40 mm dia.	5	Nos	1692	8461
<b>13.2</b>	<b><u>Motorized Butterfly Valves</u></b>				
	Providing and fixing the following motorized butterfly valves as per specifications and drawings.				
13.2.1	350 mm dia.	5	Nos.	165000	825000
<b>13.3</b>	<b>Automatic Balancing Valves</b>				
	Supply, installation, testing and commissioning of automatic balancing valves in return condenser water line of each condenser and cooling tower as per tender specification & of following sizes:				
13.3.1	350 mm dia (For Condenser & Cooling Towers)	10	Nos	107174	1071743
<b>13.4</b>	<b>Non return/Check valves :</b>				
13.4.1	300 mm dia.	5	Nos	28631	143157
<b>13.5</b>	<b>Pot strainer with drain valve</b>				
13.5.1	600 mm dia.	1	Nos	157680	157680

Item No. 1	Description 2	Qty 3	Unit 4	Rate In Rs. ( in Figure) 5	Amount (Rs.) 7
<b>13.6</b>	<b>Y- strainer with drain valve</b>				
13.6.1	350 mm dia.	5	Nos	42359	211795
<b>13.7</b>	<b>Auto Air Vent Valves</b>				
13.7.1	10 mm dia	30	Nos	500	15000
13.7.2	15 mm dia	20	Nos	850	17000
13.7.3	20 mm dia	18	Nos	1000	18000
13.7.4	25 mm dia	10	Nos	1200	12000
<b>13.8</b>	<b>Suction Guide</b>				
	Providing and fixing of suction guide of following sizes in the inlet of condenser water pumps as per specifications				
13.8.1	350 mm dia.	5	Nos.	225000	1125000
<b>14.0</b>	<b>CHILLED WATER PIPING</b>				



Item No. 1	Description 2	Qty 3	Unit 4	Rate In Rs. ( in Figure) 5	Amount (Rs.) 7
	Supply, laying/fixing, testing and commissioning of M.S. heavy class ERW piping confirming to IS : 3589/IS:1239 with necessary clamps, supports, anti vibration mountings, hangers and fittings such as bends, tees, reducers etc. duly insulated with pre-formed resin bonded fiberglass pipe section insulation having density 80 kg/cum with factory applied aluminum foil facing ( insulation thickness shall be as per ECBC 2007 R values requirements) and 26 gauge aluminum sheet cladding (for outdoor application) as per specification and approved shop drawings :				
14.1	600 mm dia	250	RM	15000	3750000
14.2	500 mm dia	100	RM	13736	1373600
14.3	450 mm dia	100	RM	12207	1220700
14.4	400 mm dia	150	RM	10406	1560900
14.5	350 mm dia	100	RM	5379	537900
14.6	300 mm dia	200	RM	4917	983400
14.7	250 mm dia	50	RM	4155	207750
14.8	200 mm dia	300	RM	3340	1002000
14.9	150 mm dia	200	RM	2369	473800
14.10	125 mm dia	200	RM	2019	403800
14.11	100 mm dia	550	RM	1677	922350
14.12	80 mm dia	600	RM	1221	732600

Item No. 1	Description 2	Qty 3	Unit 4	Rate In Rs. ( in Figure) 5	Amount (Rs.) 7
14.13	65 mm dia	750	RM	1028	771000
14.14	50 mm dia	1200	RM	835	1002000
14.15	40 mm dia	1500	RM	659	988500
14.16	32 mm dia	700	RM	589	412300
14.17	25 mm dia	200	RM	485	97000
14.18	20 mm dia	1000	RM	356	356000
<b>15.0</b>	<b>VALVES &amp; STRAINERS</b>				
	Supply, fixing and testing of following valves, strainers, in the chilled water piping complete with companion flanges, nut bolts, gaskets, supports etc. duly insulated as per specifications:				
15.1	<b>Butterfly valves ( PN 16) :</b>				
15.1.1	600 mm dia.	2	Nos	115405	230809
15.1.2	500 mm dia.	2	Nos	97122	194244
15.1.3	450 mm dia.	2	Nos	74454	148908
15.1.4	300 mm dia.	20	Nos	25494	509873
15.1.5	250 mm dia.	18	Nos	19527	351491
15.1.6	200 mm dia.	6	Nos	15783	94700

Item No. 1	Description 2	Qty 3	Unit 4	Rate In Rs. ( in Figure) 5	Amount (Rs.) 7
15.1.7	150 mm dia.	2	Nos	4982	9964
15.1.8	125 mm dia.	8	Nos	4495	35957
15.1.9	100 mm dia.	26	Nos	3648	94836
15.1.10	80 mm dia.	76	Nos	2679	203594
15.1.11	65 mm dia	36	Nos	2319	83498
15.1.12	50 mm dia.	84	Nos	2145	180205
15.1.13	40 mm dia.	16	Nos	1942	31076
15.1.14	32 mm dia	378	Nos	1667	629973
15.1.15	25 mm dia	12	Nos	1667	19999
15.1.16	20 mm dia	784	Nos	1667	1306610
15.2	<b>Motorized Butterfly Valves</b>				
	Providing and fixing the following motorized butterfly valves for chilled water pumps and boiler as per specifications				
15.2.1	300 mm dia.	5	Nos.	109079	545397
15.3	<b>Balancing valves :</b>				
	Automatic balancing Valve				
15.3.1	300 mm dia (For Chillers)	5	Nos	80196	400981
15.3.2	250 mm dia.	2	Nos	65769	131537

Item No. 1	Description 2	Qty 3	Unit 4	Rate In Rs. ( in Figure) 5	Amount (Rs.) 7
15.3.3	200 mm dia.	3	Nos	55120	165361
15.3.4	150 mm dia.	2	Nos	28502	57005
15.3.5	125 mm dia.	3	Nos	19440	58320
15.3.6	100 mm dia.	13	Nos	14043	182555
15.4	<b>Non return/Check valves :</b>				
15.4.1	350 mm dia.	1	Nos	49220	49220
15.4.2	300 mm dia.	5	Nos	28631	143157
15.4.3	250 mm dia.	9	Nos	18174	163562
15.4.4	200 mm dia.	4	Nos	11857	47430
15.4.5	150 mm dia.	1	Nos	6964	6964
15.4.6	125 mm dia.	3	Nos	5284	15853
15.4.7	100 mm dia.	1	Nos	4100	4100
15.4.8	80 mm dia.	1	Nos	3661	3661
15.4.9	65 mm dia.	1	Nos	3323	3323
15.4.10	50 mm dia.	1	Nos	2986	2986
15.5	<b>Y- strainers with drain valve</b>				

Item No. 1	Description 2	Qty 3	Unit 4	Rate In Rs. ( in Figure) 5	Amount (Rs.) 7
15.5.1	350 mm dia.	1	Nos	42359	42359
15.5.2	300 mm dia.	1	Nos	37318	37318
15.5.3	250 mm dia.	9	Nos	28846	259614
15.5.4	200 mm dia.	2	Nos	22686	45372
15.5.5	150 mm dia.	2	Nos	19987	39974
15.5.6	125 mm dia.	4	Nos	19987	79948
15.5.7	100 mm dia.	13	Nos	8707	113191
15.5.8	80 mm dia.	38	Nos	6281	238678
15.5.9	65 mm dia	18	Nos	4332	77976
15.5.10	50 mm dia	42	Nos	4000	168000
15.5.11	40 mm dia	9	Nos	2781	25029
15.5.12	32 mm dia	95	Nos	2781	264195
15.5.13	25 mm dia	4	Nos	2781	11124
15.5.14	20 mm dia	171	Nos	2781	475551
15.6	<b>Suction Guide</b>				
	Providing and fixing of suction guide of following sizes in the inlet of chilled water pumps as per specifications				
15.6.1	300 mm	5	Nos.	50000	250000

Item No. 1	Description 2	Qty 3	Unit 4	Rate In Rs. ( in Figure) 5	Amount (Rs.) 7
15.6.2	250 mm	9	Nos.	50000	450000
15.7	Providing and fixing in position the following <b>Gate Valves</b> duly insulated as per specifications:				
15.7.1	50 mm dia Valves	4	Nos.	2500	10000
15.7.2	40 mm dia Valves	4	Nos.	2000	8000
15.7.3	32 mm dia Valves	12	Nos.	1800	21600
15.8	<b>Auto Air Vent Valves</b>				
15.8.1	10 mm dia	25	Nos.	500	12500
15.8.2	15 mm dia	20	Nos.	850	17000
15.8.3	20 mm dia	20	Nos.	1000	20000
15.8.4	25 mm dia	20	Nos.	1200	24000
15.9	<b>Ball Valve with strainer</b>				
15.9.1	25 mm	10	Nos.	2100	21000
15.9.2	20 mm	10	Nos.	1800	18000
15.10	<b>Ball valve without strainer</b>				
15.10.1	25 mm	10	Nos.	1200	12000

Item No. 1	Description 2	Qty 3	Unit 4	Rate In Rs. ( in Figure) 5	Amount (Rs.) 7
15.10.2	20 mm	10	Nos.	1000	10000
15.11	Supply, installation, testing and commissioning cooling thermostats :-				
15.11.1	For AHUs	124	Nos.	4317	535308
15.11.2	For FCUs	290	Nos.	1727	500830
<b>16.0</b>	<b>DRAIN PIPING</b>				
	Supply, laying/fixing, testing and commissioning of G.I. medium class ERW piping conforming to IS:1239 with necessary clamps, supports, anti vibration mountings, hangers and fittings such as bends, tees, reducers etc. duly insulated and painted as per specifications for condensate drain from air handling units and chillers etc.				
16.1.1	50 mm dia	500	RM	674	337000
16.1.2	40 mm dia	350	RM	524	183400
16.1.3	32 mm dia	200	RM	460	92000
16.1.4	25 mm dia	250	RM	375	93750
<b>17.0</b>	<b>On-line non-chemical water treatment system</b>				

Item No. 1	Description 2	Qty 3	Unit 4	Rate In Rs. ( in Figure) 5	Amount (Rs.) 7
17.1	Supply, Installation, Testing and Commissioning of On line, Non-Chemical Water Treatment Scale Preventor System : for 900 TR AC Chiller, having flow rate 2160 USGPM	5	Nos.	650000	3250000
<b>C)</b>	<b><u>AIR DISTRIBUTION</u></b>				
<b>18.0</b>	<b>GSS DUCTING</b>				
	Supply, installation, testing, commissioning and balancing of G.S.S ducting of following thickness including necessary supports, hangers, nut bolts, gaskets, splitter dampers, vanes canvass connections etc. complete as per specifications & drawings:				
18.1	1.25 mm (18 G) GSS 275 GSM	15000	Sqm.	1350	20250000
18.2	1.25 mm (18 G) GSS 120 GSM	4000	Sqm.	1101	4404000
18.3	1.0 mm (20 G ) GSS 120 GSM	7000	Sqm.	912	6384000
18.4	0.80 mm (22 G) GSS 120 GSM	15000	Sqm.	743	11145000
18.5	0.63 mm (24 G) GSS 120 GSM	16000	Sqm.	622	9952000
<b>19.0</b>	<b>ALUMINIUM DUCTING</b>				
	Supply, fabrication, installation and testing of aluminium ducts in accordance with the approved shop floor drawing and specifications. Material should confirm to IS 737 latest edition.				
19.1	22 gauge	3000	Sqm.	762	2286000
19.2	20 gauge	800	Sqm.	929	743200



Item No. 1	Description 2	Qty 3	Unit 4	Rate In Rs. ( in Figure) 5	Amount (Rs.) 7
19.3	18 gauge	400	Sqm	1199	479600
<b>20.0</b>	<b>FIRE DAMPERS</b>				
	Supply, installation, testing and commissioning of motorized combined smoke & fire dampers made out of GI sheet of at least 120 minutes fire rating complete with GI damper of required size, smoke sensor, etc as per specifications and shop drawings.				
20.1	Fire/smoke Damper	180	Sqm	8559	1540620
20.2	Actuator & control panel	280	sets	10698	2995440
<b>21.0</b>	<b>VOLUME CONTROL DAMPERS</b>				
	Supply, installation and testing of volume control dampers of GI sheet, box type to be provided in ducts complete with suitable links, levers and quadrants for manual control of air volume and air balancing as per specifications and drawings.	205	Sqm.	5135	1052675
<b>22.0</b>	<b>CEILING DIFFUSERS</b>				
22.1	Supply, Installation, testing and balancing of <b>square/circular supply air diffusers</b> of powder coated aluminium construction with attached volume control dampers as per specs. and drawings.	75	Sqm.	8984	673800

Item No. 1	Description 2	Qty 3	Unit 4	Rate In Rs. ( in Figure) 5	Amount (Rs.) 7
22.2	Supply, installation, testing and balancing of <b>square/circular return air diffusers</b> of powder coated aluminium construction without volume control dampers as per specifications and drawings	75	Sqm.	6631	497325
22.3	Supply, installation, testing and commissioning of powder coated extruded aluminium <b>Jet diffuser</b> of various sizes with adjustable valves and complete as per specifications.	12	Sqm.	8000	96000
<b>23.0</b>	<b>GRILLES</b>				
23.1	Supply, installation, testing and balancing of supply/return air grilles with/without volume control dampers of powder coated aluminium construction suitable for installation in walls, false ceiling boxing etc as per specifications and drawings.				
23.1.1	Supply air grilles in single louvers with volume control dampers.	45	Sqm.	8449	380205
23.1.2	Return air grilles in single louvers without volume control dampers.	45	Sqm.	4652	209340
23.2	Supply, installation, testing and balancing of powder coated extruded M.S. Air Grilles with / without volume control dampers.				
23.2.1	Supply air grilles in single louvers with volume control dampers.	150	Sqm.	8000	1200000
23.2.2	Exhaust air grilles in single louvers without volume control dampers.	80	Sqm.	4500	360000

Item No. 1	Description 2	Qty 3	Unit 4	Rate In Rs. ( in Figure) 5	Amount (Rs.) 7
23.2.3	Painted metal jali with M.S. frames for the duct termination in the blower room.	45	Sqm.	1765	79425
<b>24.0</b>	<b>LINEAR GRILLES</b>				
	Supply, installation,testing and balancing of air linear grilles of powder coated aluminium construction suitable for installation in walls/false ceiling, boxing etc as per specifications and drawings.	35	Sqm.	4706	164710
<b>25.0</b>	<b>GRILLE DAMPERS</b>				
25.1	Supply, installation and balancing of aluminium construction volume control dampers for linear grills.	35	Sqm.	3797	132895
<b>26.0</b>	<b>LAMINAR FLOW DIFFUSERS</b>				
26.1	Providing & fixing of stainless steel plenum duly reinforced and made 100% air tight complete with 55% free perforated grilles( 18 Gauge SS) at bottom for laminar flow in OTs. The plenum shall be insulated with 15 mm closed cell polyethylene insulation & shall be manufactured & installed by specialised agency as per designed to be approved by customer/Consultant				
	Size: 1200 x 600	216	Nos.	10499	2267784
26.2	Providing & fixing of aluminium powder coated grilles with 60% face area. The grill shall be complete with damper & complete 25 mm thick aluminium filters	40	Sqm	8000	320000
<b>27.0</b>	<b>FRESH AIR GRILLES with bird screen</b>				

<b>Item No. 1</b>	<b>Description 2</b>	<b>Qty 3</b>	<b>Unit 4</b>	<b>Rate In Rs. ( in Figure) 5</b>	<b>Amount (Rs.) 7</b>
27.1	Supply, installation,testing and balancing of extruded aluminium fresh air grilles with louvers and bird screen as per specification and drawings.(for fresh air supply during fire)	35	Sqm.	6300	220500
27.2	Supply, installation,testing and balancing of extruded aluminium exhaust air grilles with louvers and bird screen as per specification and drawings.	35	Sqm.	6417	224595
27.3	Supply, installation, testing, commissioning and balancing of fresh air opening comprising of powder coated extruded aluminium louvers with bird screen, projection with frame and volume control damper with lever mounting arrangement etc. as per specifications and drawings.	20	Sqm.	8300	166000
<b>28.0</b>	<b>Pan type Humidifier</b>				
	Supply, installation, testing and commissioning of electric pan type humidifiers in each Air Handling Rooms to provide humidification during winter months heating operation. The humidifier shall evaporate 12 liters water per hour and complete with all required water valves incoming MCB, humidistat and ,electrical & control wiring and earthing as required.				
28.1	9 KW	24	Sets	27431	658346
28.2	6 KW	22	Sets	26073	573598
<b>29.0</b>	<b>DUCT INSULATION</b>				

Item No. 1	Description 2	Qty 3	Unit 4	Rate In Rs. ( in Figure) 5	Amount (Rs.) 7
29.1	Supply and fixing of 18 mm thick foil faced FR Closed Cell Chemically Crossed Linked Poly Ethylene Foam insulation (fire retardant and self extinguishng type) density not less than 32 Kg/cu M, thermal conductivity not more than 0.032 W/mK with adhesive tape etc. on ducts complete for supply /return air ducting as per the specifications and approved shop drawings.	28000	Sqm.	449	12572000
29.2	Supply and fixing of 18 mm thick foil faced and UV protected FR Closed Cell Chemically Crossed Linked Poly Ethylene Foam insulation (fire retardant and self extinguishng type) density not less than 32 Kg/cu M, thermal conductivity not more than 0.032 W/mK with adhesive tape etc. on ducts complete for supply air ducting as per the specifications and approved shop drawings.	1400	Sqm.	662	926800
29.3	Aluminium clading on insulated ducts with 26 SWG aluminium sheet having ship lapped joints.	50	Sqm.	300	15000
<b>30.0</b>	<b>ACOUSTIC</b>				
30.1	<b>DUCT ACOUSTIC LINING</b>				
	Supplying and fixing of acoustic lining of duct with fibre glass rigid board of density 48 Kg/m <sup>3</sup> sealed in fibre glass tissue paper and covered with 0.5 mm thick perforated aluminium sheet as per specifications.				
30.1.1	12 mm thick fibre glass rigid board.	1000	Sqm.	499	499000
30.1.2	25 mm thick fibre glass rigid board.	3500	Sqm.	699	2446500

Item No. 1	Description 2	Qty 3	Unit 4	Rate In Rs. ( in Figure) 5	Amount (Rs.) 7
	<b>Note:-</b> No lining inside supply / return duct or plenum shall be done if the airside system is equipped with hepa filters.				
30.2	<b>PLANT ROOMS ACOUSTIC INSULATION</b>				
	Supply and fixing of acoustic insulation on walls and ceiling of Air handling units rooms with 50 mm thick resin bonded fibre glass slabs fixed in frame work and finished with vapour barrier and perforated aluminium sheet complete as per specifications and drawings.	5000	Sq.m.	954	4770000
<b>D)</b>	<b><u>ELECTRICAL</u></b>				
<b>31.0</b>	<b>AIR- CONDITIONING PANELS</b>				
	<b>All bill of items are to be read in conjunction with specifications and drawings.</b>				
	<b>All outgoing shall be provided with Stop / Manual /Auto selector switch to facilitate operation through BAS. All starters shall be provided with suitable potential free Contacts for Connections to Building Automation System.</b>				

Item No. 1	Description 2	Qty 3	Unit 4	Rate In Rs. ( in Figure) 5	Amount (Rs.) 7
	Supply, installation, testing and commissioning of A/C panels suitable for 415 V, 3 phase, 4 wires, 50 Hz power distribution system. The panel shall be cubicle non draw out type free standing floor mounting sheet metal enclosed flush front with aluminium busbars, separate earth bus bars to be provided throughout the length of the panel. The incoming & outgoing feeder breakers, fuses, indicating lamps etc. shall be accomodated in a modular multitier arrangement. The painting shall be done as per relavant IS codes as specified in the specifications. Adequate size cable alley shall be provided all round the panel and in the back for each cable bending and termination. The outgoing feeders inside the panel shall be connected through solid bus bar. Flexible cable links are not acceptable. Bus bars shall be provided with sleeves or heat resistant insulated paint. The panel shall be suitable for cable entry from top. The panel shall be fabricated after the approval of fabrication drawings.All the panels shall have minimum 20%spare capacity.				
	i)All switches to be heavy duty type base mounted having operating handle.				
	ii) BMS compatible with BACnet protocal				
	<b>SSB Block</b>				
31.1	<b>Main/ Emergency Air-conditioning MCC in plant room in basement</b>				
	<b>INCOMER</b>				

Item No. 1	Description 2	Qty 3	Unit 4	Rate In Rs. ( in Figure) 5	Amount (Rs.) 7
	4 No. 4000A, 415/500V, Motorised, Fully Drawout type (EDO), Four Pole, Air Circuit Breaker with microprocessor based overload, short circuit, Instantaneous & earth Fault trip including under voltage release and lockable trip push button. The ACB should have Icw = Ics= 50KA for 1 sec. R, Y & B Phase indicating lamps (LED type) with 2A control SP MCBs. Digital multi function meter with one set of suitable CTs, CT shorting links, R/Y/B LED indicating lamps and 2A control SP MCBs.				
	1 set of indicating lamps to indicate OPEN, CLOSE, TRIP.				
	Push button to CLOSE the ACB.				
	1 Set of A meter with ASS and CTs.				
	<b>All ACBs should be computer compatible.</b>				
	<b>BUSBARS :5000 TPN</b>				
	<b>Bus Coupler</b>				
	2 No. 4000A, 415/500V, Motorised, Fully Drawout type (EDO), Four Pole, Air Circuit Breaker with microprocessor based overload, short circuit, Instantaneous & earth Fault trip including under voltage release and lockable trip push button. The ACB should have Icw = Ics= 35KA for 1 sec.				
	1 set of indicating lamps to indicate OPEN, CLOSE, TRIP.				
	Push button to CLOSE the ACB.				
	1 Set of A meter with ASS and CTs.				
	<b>All ACBs shall be computer compatible.</b>				
	<b>OUTGOING</b>				



Item No. 1	Description 2	Qty 3	Unit 4	Rate In Rs. ( in Figure) 5	Amount (Rs.) 7
	5 No. 2000A, 415/500V, Motorised, Fully Drawout type (EDO), Four Pole, Air Circuit Breaker with microprocessor based overload, short circuit, instantanoious & earth Fault trip including under voltage release and lockable trip push button. The ACB should have I <sub>cw</sub> =I <sub>cs</sub> =35 KA for 1 sec.1 set of indicating lamps to indicate OPEN, CLOSE, TRIP.1 set of indicating lamps to indicate OPEN, CLOSE, TRIP.Push button to CLOSE the ACB. 1 Set of A meter with ASS and CTs. For Water chilling machines.				
	3 nos 1250 Amp 415 volts, 35 KA (Isc), FP MCCB microprocessor based having variable current settings .Extended rotary operating mechanism with door interlock with defeat feature and padlock facility. MCCB should be with spreader link and phase barriers.Indicating lamps with 2A protection MCBs to indicate OPEN, CLOSE, TRIP for MCCB.Ampere Metre of suitable range with suitable set of CT's and ASS. For hot water genetators.(3W)				
	2 nos 630 Amp 415 volts, 35 KA (Isc), FP MCCB microprocessor based having variable current settings of .Extended rotary operating mechanism with door interlock with defeat feature and padlock facility. MCCB should be with spreader link and phase barriers.Indicating lamps with 2A protection MCBs to indicate OPEN, CLOSE, TRIP for MCCB.Ampere Metre of suitable range with suitable set of CT's and ASS. For hot water genetators.				

Item No. 1	Description 2	Qty 3	Unit 4	Rate In Rs. ( in Figure) 5	Amount (Rs.) 7
	5 Nos. 400 Amp 415 volts, 35 KA (Isc), FP MCCB microprocessor based having variable current settings .Extended rotary operating mechanism with door interlock with defeat feature and padlock facility. MCCB should be with spreader link and phase barriers.Indicating lamps with 2A protection MCBs to indicate OPEN, CLOSE, TRIP for MCCB.Ampere Metre of suitable range with suitable set of CT's and ASS with fully automatic star delta starter suitable for 125 hp condenser water pumps.				
	5 Nos. 250 Amp 415 volts, 35 KA (Isc), FP MCCB with thermal magnetic release having variable current settings Extended rotary operating mechanism with door interlock with defeat feature and padlock facility. MCCB should be with spreader link and phase barriers.Indicating lamps with 2A protection MCBs to indicate OPEN, CLOSE, TRIP for MCCB.Ampere Metre of suitable range with suitable set of CT's and ASS with fully automatic star delta starter suitable for 60 hp Primary chilled water pumps.				
	12 Nos. 300 Amp 415 volts, 35 KA (Isc), FP MCCB with thermal magnetic release having variable current settings .Extended rotary operating mechanism with door interlock with defeat feature and padlock facility. MCCB should be with spreader link and phase barriers.Indicating lamps with 2A protection MCBs to indicate OPEN, CLOSE, TRIP for MCCB.Ampere Metre of suitable range with suitable set of CT's and ASS with fully automatic star delta starter suitable for 75 hp Secondary chilled water pumps.				

Item No. 1	Description 2	Qty 3	Unit 4	Rate In Rs. ( in Figure) 5	Amount (Rs.) 7
	4 Nos. 63 Amp 415 volts, 35 KA (Isc), FP MCCB with thermal magnetic release having variable current settings .Extended rotary operating mechanism with door interlock with defeat feature and padlock facility. MCCB should be with spreader link and phase barriers.Indicating lamps with 2A protection MCBs to indicate OPEN, CLOSE, TRIP for MCCB.Ampere Metre of suitable range with suitable set of CT's and ASS with fully automatic star delta starter suitable for 15 hp Hot water pumps.				
	25 Nos. 63 Amp 415 volts, 35 KA (Isc), FP MCCB with thermal magnetic release having variable current settings .Extended rotary operating mechanism with door interlock with defeat feature and padlock facility. MCCB should be with spreader link and phase barriers.Indicating lamps with 2A protection MCBs to indicate OPEN, CLOSE, TRIP for MCCB.Ampere Metre of suitable range with suitable set of CT's and ASS with fully automatic star delta starter suitable for 10 hp cooling towers.				
	6 Nos. 32 Amp 415 volts, 10 KA , FP MCCB with thermal magnetic release having variable current settings. Extended rotary operating mechanism with door interlock with defeat feature and padlock facility. MCCB should be with spreader link and phase barriers.Indicating lamps with 2A protection MCCBs to indicate OPEN, CLOSE, TRIP for MCCB.Ampere Metre of suitable range with suitable set of CT's and ASS.				
	5 No. 16 Amps 415 MCCB 10 KA for, ON-OFF indication lamps with push button,ammeter with ASS and CTs.				

Item No. 1	Description 2	Qty 3	Unit 4	Rate In Rs. ( in Figure) 5	Amount (Rs.) 7
	<b>Complete panel as above</b>	1	Panel	11500000	11500000
31.2	<b>Distribution Panels</b>				
	<b>SSB Block</b>				
32.2.1	<b>Ventilation fan DBs</b>				
	<b>INCOMER :</b>				
	1 No. 200 Amps 25 KA FP MCCB, 1 no of 0-100 amp ammeter with selector switch & CT's , 1 no. 0-500 volt voltmeter with selector switch & fuses , 1set of indicating lights (RYB).				
	<b>Bus Bar</b>				
	250 A TPN Aluminium bus bar 415V , 50 Hz.				
	<b>OUTGOINGS :</b>				
	2 set - 100 A, 415 V 15 KA FP MCCB .				
	6 set - 63 A, 415 V 15 KA FP MCCB .				
	1 set - 32 A, 415 V 15 KA FP MCCB .				
	1 set - 16 A, 415 V 10 KA FP MCCB .				
	6 set - 16 A, FP MCB				
	3 set -32 A, FP MCB				

Item No. 1	Description 2	Qty 3	Unit 4	Rate In Rs. ( in Figure) 5	Amount (Rs.) 7
	<b>Complete panel as above</b>	32	Panel	196300	6281600
31.2.2	<b>AHP -BF</b>				
	<b>INCOMER :</b>				
	1 No. 250 Amps 25 KA FP MCCB Microprocessor based, 1 no of 0-300 amp ammeter with selector switch & CT's , 1 no. 0-500 volt voltmeter with selector switch & fuses , 1set of indicating lights (RYB).				
	<b>Bus Bar</b>				
	300 A TPN Aluminium bus bar 415V , 50 Hz.				
	<b>OUTGOINGS :</b>				
	4 set - 63 A, 415 V 15 KA FP MCCB .				
	2 set - 32 A, 415 V 15 KA FP MCCB .				
	2 set - 16 A, 415 V 10 KA FP MCCB .				
	6 set - 16 A, FP MCB				
	3 set -32 A, FP MCB				
	<b>Complete panel as above</b>	4	Panel	166250	665000
31.2.3	<b>AHP -GF</b>				
	<b>INCOMER :</b>				

Item No. 1	Description 2	Qty 3	Unit 4	Rate In Rs. ( in Figure) 5	Amount (Rs.) 7
	1 No. 200 Amps 25 KA FP MCCB, 1 no of 0-100 amp ammeter with selector switch & CT's , 1 no. 0-500 volt voltmeter with selector switch & fuses , 1set of indicating lights (RYB).				
	<b>Bus Bar</b>				
	250 A TPN Aluminium bus bar 415V , 50 Hz.				
	<b>OUTGOINGS :</b>				
	4 set - 63 A, 415 V 15 KA FP MCCB .				
	2 set - 32 A, 415 V 15 KA FP MCCB .				
	2 set - 16 A, 415 V 10 KA FP MCCB .				
	6 set - 16 A, FP MCB				
	3 set -32 A, FP MCB				
	<b>Complete panel as above</b>	4	Panel	146000	584000
31.2.4	<b>AHP -FF1</b>				
	<b>INCOMER :</b>				
	1 No. 160 Amps 25 KA FP MCCB, 1 no of 0-100 amp ammeter with selector switch & CT's , 1 no. 0-500 volt voltmeter with selector switch & fuses , 1set of indicating lights (RYB).				
	<b>Bus Bar</b>				
	200 A TPN Aluminium bus bar 415V , 50 Hz.				

Item No. 1	Description 2	Qty 3	Unit 4	Rate In Rs. ( in Figure) 5	Amount (Rs.) 7
	<b>OUTGOINGS :</b>				
	2 set - 63 A, 415 V 15 KA FP MCCB .				
	1 set - 32 A, 415 V 15 KA FP MCCB .				
	2 set - 16 A, 415 V 10 KA FP MCCB .				
	6 set - 16 A, FP MCB				
	3 set -32 A, FP MCB				
	<b>Complete panel as above</b>	1	Panel	98500	98500
31.2.5	<b>AHP -FF2</b>				
	<b>INCOMER :</b>				
	1 No. 100 Amps 25 KA FP MCCB, 1 no of 0-100 amp ammeter with selector switch & CT's , 1 no. 0-500 volt voltmeter with selector switch & fuses , 1set of indicating lights (RYB).				
	<b>Bus Bar</b>				
	150 A TPN Aluminium bus bar 415V , 50 Hz.				
	<b>OUTGOINGS :</b>				
	2 set - 63 A, 415 V 15 KA FP MCCB .				
	1 set - 32 A, 415 V 15 KA FP MCCB .				
	1 set - 16 A, 415 V 10 KA FP MCCB .				

Item No. 1	Description 2	Qty 3	Unit 4	Rate In Rs. ( in Figure) 5	Amount (Rs.) 7
	6 set - 16 A, FP MCB				
	3 set -32 A, FP MCB				
	<b>Complete panel as above</b>	1	Panel	82500	82500
31.2.6	<b>AHP -FF 3, SF</b>				
	<b>INCOMER :</b>				
	1 No. 320 Amps 25 KA FP MCCB Microprocessor based, 1 no of 0-100 amp ammeter with selector switch & CT's , 1 no. 0-500 volt voltmeter with selector switch & fuses , 1set of indicating lights (RYB).				
	<b>Bus Bar</b>				
	400 A TPN Aluminium bus bar 415V , 50 Hz.				
	<b>OUTGOINGS :</b>				
	10 set - 63 A, 415 V 15 KA FP MCCB .				
	2 set - 32 A, 415 V 15 KA FP MCCB .				
	3 set - 16 A, 415 V 10 KA FP MCCB .				
	6 set - 16 A, FP MCB				
	3 set -32 A, FP MCB				
	<b>Complete panel as above</b>	4	Panel	262500	1050000
31.2.7	<b>AHP -FF,SF</b>				



Item No. 1	Description 2	Qty 3	Unit 4	Rate In Rs. ( in Figure) 5	Amount (Rs.) 7
	<b>INCOMER :</b>				
	1 No. 125 Amps 25 KA FP MCCB, 1 no of 0-100 amp ammeter with selector switch & CT's , 1 no. 0-500 volt voltmeter with selector switch & fuses , 1set of indicating lights (RYB).				
	<b>Bus Bar</b>				
	150 A TPN Aluminium bus bar 415V , 50 Hz.				
	<b>OUTGOINGS :</b>				
	2 set - 63 A, 415 V 15 KA FP MCCB .				
	1 set - 32 A, 415 V 15 KA FP MCCB .				
	1 set - 16 A, 415 V 10 KA FP MCCB .				
	6 set - 16 A, FP MCB				
	3 set -32 A, FP MCB				
	<b>Complete panel as above</b>	15	Panel	82500	1237500
31.2.8	<b>AHP - 4F</b>				
	<b>INCOMER :</b>				
	1 No. 250 Amps 25 KA FP MCCB microprocessor based, 1 no of 0-100 amp ammeter with selector switch & CT's , 1 no. 0-500 volt voltmeter with selector switch & fuses , 1set of indicating lights (RYB).				
	<b>Bus Bar</b>				

Item No. 1	Description 2	Qty 3	Unit 4	Rate In Rs. ( in Figure) 5	Amount (Rs.) 7
	300 A TPN Aluminium bus bar 415V , 50 Hz.				
	<b>OUTGOINGS :</b>				
	8 set - 63 A, 415 V 15 KA FP MCCB .				
	2 set - 32 A, 415 V 15 KA FP MCCB .				
	2 set - 16 A, 415 V 10 KA FP MCCB .				
	6 set - 16 A, FP MCB				
	3 set -32 A, FP MCB				
	<b>Complete panel as above</b>	8	Panel	222500	1780000
31.2.9	<b>AHP -</b>				
	<b>INCOMER :</b>				
	1 No. 200 Amps 25 KA FP MCCB, 1 no of 0-100 amp ammeter with selector switch & CT's , 1 no. 0-500 volt voltmeter with selector switch & fuses , 1set of indicating lights (RYB).				
	<b>Bus Bar</b>				
	250 A TPN Aluminium bus bar 415V , 50 Hz.				
	<b>OUTGOINGS :</b>				
	2 set - 100 A, 415 V 15 KA FP MCCB .				
	2 set - 63 A, 415 V 15 KA FP MCCB .				

Item No. 1	Description 2	Qty 3	Unit 4	Rate In Rs. ( in Figure) 5	Amount (Rs.) 7
	2 set - 32 A, 415 V 15 KA FP MCCB .				
	2 set - 16 A, 415 V 10 KA FP MCCB .				
	6 set - 16 A, FP MCB				
	3 set -32 A, FP MCB				
	<b>Complete panel as above</b>	4	Panel	169500	678000
31.2.10	<b>AHP - Terrace Floor</b>				
	<b>INCOMER :</b>				
	1 No. 160 Amps 25 KA FP MCCB, 1 no of 0-100 amp ammeter with selector switch & CT's , 1 no. 0-500 volt voltmeter with selector switch & fuses , 1set of indicating lights (RYB).				
	<b>Bus Bar</b>				
	200 A TPN Aluminium bus bar 415V , 50 Hz.				
	<b>OUTGOINGS :</b>				
	5 set - 32 A, 415 V 15 KA FP MCCB .				
	10 set - 16 A, 415 V 10 KA FP MCCB .				
	3 set - 16 A, FP MCB				
	2 set -32 A, FP MCB				
	<b>Complete panel as above</b>	1	Panel	230000	230000

Item No. 1	Description 2	Qty 3	Unit 4	Rate In Rs. ( in Figure) 5	Amount (Rs.) 7
32.0	<b>AHU STARTER PANELS</b>				
	Supply, installation, testing and commissioning of cubicle type totally enclosed wall/floor mounted free standing type, dust, damp and vermin proof for AHU made of 2mm thick CRCA sheet steel in compartmentalized design as per specification and drawings. These distribution boards shall be mounted on 50x50x6 MS angle frame work grouted to floor/walls of recessed. The rate includes the angle iron frame, support, painting, numbering, earthing etc. as required				
32.1	<b>AHU STARTER PANEL (For OT's and critical areas)</b>				
	<b>INCOMER :</b>				
	1 No. 63 Amps 25 KA FP MCCB, 1 no of 0-100 amp ammeter with selector switch & CT's , 1 no. 0-500 volt voltmeter with selector switch & fuses , 1set of indicating lights (RYB).				
	<b>Bus Bar</b>				
	100 A TPN Aluminium bus bar 415V , 50 Hz.				
	<b>OUTGOINGS :</b>				
	1 set - 32 A, 415 V 15 KA FP MCCB, single phase preventor, suitable starter for 5.0 /7.5 HP motor with thermal overload protection and spare NO-NC contacts for interlocking, ON-OFF indication lamps with push button for AHU motor as required.				

Item No. 1	Description 2	Qty 3	Unit 4	Rate In Rs. ( in Figure) 5	Amount (Rs.) 7
	1 set - 32 A, 415 V 15 KA FP MCCB, contactors of suitable rating for each bank , ON-OFF indication lamps for winter humidifier.				
	1 set - 32 A, 415 V 15 KA FP MCCB , as spares.				
	1 set - 16 A, 415 V 10 KA FP MCCB .				
	2 set - 16 A, FP MCB				
	2 set -32 A, FP MCB				
	<b>Complete panel as above</b>	22	Panel	74800	1645600
32.2	<b>AHU STARTER PANEL (For wards)</b>				
	<b>INCOMER :</b>				
	1 No. 100 Amps 25 KA FP MCCB, 1 no of 0-100 amp ammeter with selector switch & CT's , 1 no. 0-500 volt voltmeter with selector switch & fuses , 1set of indicating lights (RYB).				
	<b>Bus Bar</b>				
	125 A TPN Aluminium bus bar 415V , 50 Hz.				
	<b>OUTGOINGS :</b>				
	1 set - 63 A, 415 V 15 KA FP MCCB, single phase preventor, suitable starter for12.5/15 HP motor with thermal overload protection and spare NO-NC contacts for interlocking, ON-OFF indication lamps with push button for AHU motor as required.				
	1 set - 63 A, 415 V 15 KA FP MCCB, contactors of suitable rating for each bank , ON-OFF indication lamps for winter humidifier.				

Item No. 1	Description 2	Qty 3	Unit 4	Rate In Rs. ( in Figure) 5	Amount (Rs.) 7
	1 set - 63 A, 415 V 15 KA FP MCCB .				
	1 set - 16 A, 415 V 10 KA FP MCCB .				
	2 set - 16 A, FP MCB				
	2 set -32 A, FP MCB				
	<b>Complete panel as above</b>	7	Panel	97200	680400
32.3	<b>AHU STARTER PANEL (For wards)</b>				
	<b>INCOMER :</b>				
	1 No. 160 Amps 25 KA FP MCCB, 1 no of 0-100 amp ammeter with selector switch & CT's , 1 no. 0-500 volt voltmeter with selector switch & fuses , 1set of indicating lights (RYB).				
	<b>Bus Bar</b>				
	160 A TPN Aluminium bus bar 415V , 50 Hz.				
	<b>OUTGOINGS :</b>				
	1 set - 100 A, 415 V 15 KA FP MCCB, single phase preventor, suitable starter for 20/25 HP motor with thermal overload protection and spare NO-NC contacts for interlocking, ON-OFF indication lamps with push button for AHU motor as required.				
	1 set - 63 A, 415 V 15 KA FP MCCB, contactors of suitable rating for each bank , ON-OFF indication lamps for winter humidifier.				
	1 set - 100 A, 415 V 15 KA FP MCCB , as spares.				

Item No. 1	Description 2	Qty 3	Unit 4	Rate In Rs. ( in Figure) 5	Amount (Rs.) 7
	1 set - 63 A, 415 V 15 KA FP MCCB .				
	1 set - 16 A, 415 V 10 KA FP MCCB .				
	2 set - 16 A, FP MCB				
	2 set -32 A, FP MCB				
	<b>Complete panel as above</b>	10	Panel	117800	1178000
32.4	<b>AHU STARTER PANELS</b>				
	1 No. 63 Amps MCCB 10 KA for 30 HP Motor with suitable Starters for motor with thermal overload protection,single phase preventor,spare NO_NC contacts for interlocking, ON-OFF indication lamps with push button,ammeter with ASS and CTs for fan motor as required.	1	Nos.	30413	30413
32.5	<b>AHU STARTER PANEL</b>				
	1 No. 63 Amps MCCB 10 KA for 25 HP Motor with suitable Starters for motor with thermal overload protection,single phase preventor,spare NO_NC contacts for interlocking, ON-OFF indication lamps with push button,ammeter with ASS and CTs for fan motor as required.	2	Nos.	30413	60826
32.6	<b>AHU STARTER PANEL</b>				

Item No. 1	Description 2	Qty 3	Unit 4	Rate In Rs. ( in Figure) 5	Amount (Rs.) 7
	1 No. 63 Amps MCCB 10 KA for 20 HP Motor with suitable Starters for motor with thermal overload protection,single phase preventor,spare NO_NC contacts for interlocking, ON-OFF indication lamps with push button,ammeter with ASS and CTs for fan motor as required.	10	Nos.	30413	304130
32.7	<b>AHU STARTER PANEL</b>				
	1 No. 63 Amps MCCB 10 KA for 15 HP Motor with suitable Starters for motor with thermal overload protection,single phase preventor,spare NO_NC contacts for interlocking, ON-OFF indication lamps with push button,ammeter with ASS and CTs for Air Washer motor as required.	14	Nos.	23379	327306
32.8	<b>AHU/FAN STARTER PANEL</b>				
	1 No. 63 Amps MCCB 10 KA for 12.5 HP Motor with suitable Starters for motor with thermal overload protection,single phase preventor,spare NO_NC contacts for interlocking, ON-OFF indication lamps with push button,ammeter with ASS and CTs for AHU/Fan motor as required.	21	Nos.	23379	490959
32.9	<b>AHU/FAN STARTER PANEL</b>				
	1 No. 32 Amps MCCB 10 KA for 10 HP Motor with suitable Starters for motor with thermal overload protection,single phase preventor,spare NO_NC contacts for interlocking, ON-OFF indication lamps with push button,ammeter with ASS and CTs for AHU/Fan motor as required.	26	Nos.	23379	607854



Item No. 1	Description 2	Qty 3	Unit 4	Rate In Rs. ( in Figure) 5	Amount (Rs.) 7
32.10	<b>AHU/FAN STARTER PANEL</b>				
	1 No. 32 Amps MCCB 10 KA for 7.5 HP Motor with suitable Starters for motor with thermal overload protection,single phase preventor,spare NO_NC contacts for interlocking, ON-OFF indication lamps with push button,ammeter with ASS and CTs for AHU/Fan motor as required.	35	Nos.	18093	633255
32.1	<b>AHU/FAN STARTER PANEL</b>				
	1 No. 16 Amps MCCB 10 KA for 5 HP Motor with suitable Starters for motor with thermal overload protection,single phase preventor,spare NO_NC contacts for interlocking, ON-OFF indication lamps with push button,ammeter with ASS and CTs for AHU motor as required.	16	Nos.	18093	289488
32.12	<b>AHU/FAN STARTER PANEL</b>				
	1 No. 16 Amps MCCB 10 KA for 3 HP Motor with suitable Starters for motor with thermal overload protection,single phase preventor,spare NO_NC contacts for interlocking, ON-OFF indication lamps with push button,ammeter with ASS and CTs for AHU/Fan motor as required.	7	Nos.	16810	117670
32.13	<b>AHU/FAN STARTER PANEL</b>				

Item No. 1	Description 2	Qty 3	Unit 4	Rate In Rs. ( in Figure) 5	Amount (Rs.) 7
	1 No. 16 Amps MCCB 10 KA for 2 HP Motor with suitable Starters for motor with thermal overload protection,single phase preventor,spare NO_NC contacts for interlocking, ON-OFF indication lamps with push button,ammeter with ASS and CTs for AHU/Fan motor as required.	8	Nos.	16180	129440
32.14	<b>AHU/FAN STARTER PANEL</b>				
	1 No. 16 Amps MCCB 10 KA for 1.5 HP Motor with suitable Starters for motor with thermal overload protection,single phase preventor,spare NO_NC contacts for interlocking, ON-OFF indication lamps with push button,ammeter with ASS and CTs for AHU/Fan motor as required.	2	Nos.	16180	32360
32.15	<b>AHU/FAN STARTER PANEL</b>				
	1 No. 16 Amps MCCB 10 KA for 1/0.75/0.5 HP Motor with suitable Starters for motor with thermal overload protection,single phase preventor,spare NO_NC contacts for interlocking, ON-OFF indication lamps with push button,ammeter with ASS and CTs for AHU/Fan motor as required.	2	Nos.	16744	33488
33.0	<b>CABLING</b>				
33.1	Supplying, laying, effecting proper connections, testing & commissioning of following size of 1.1 kv PVC insulated aluminium conducting armoured cables as per IS 1554 Part- 1laid underground/cable tray/on surface of wall/hume pipe etc. & termination with brass compression glands as required.				

Item No. 1	Description 2	Qty 3	Unit 4	Rate In Rs. ( in Figure) 5	Amount (Rs.) 7
33.1.1	3.5Cx 400 sq.mm cable	600	Mtr	2600	1560000
33.1.2	3.5Cx 300 sq.mm cable	600	Mtr	2285	1370825
33.1.3	3.5Cx 240 sq.mm cable	800	Mtr	1875	1499966
33.1.4	3.5C x 185 sq.mm cable	2000	Mtr	1480	2960338
33.1.5	3.5C x 150 sq.mm cable	1000	Mtr	1215	1215442
33.1.6	3.5C x 120 sq.mm cable	900	Mtr	1026	922976
33.1.7	3.5C x 95 sq.mm cable	750	Mtr	811	608584
33.1.8	3.5C x 70 sq.mm cable	600	Mtr	661	396400
33.1.9	3.5C x 50 sq.mm cable	120	Mtr	473	56767
33.1.10	3.5C x 35 sq.mm cable	300	Mtr	392	117628
33.1.11	4Cx 25 sq.mm Cable	600	Mtr	323	193696
33.1.12	4 C X 16 sq. mm. Cable	800	Mtr	265	211755
33.1.13	4 C X10 sq. mm. Cable	1000	Mtr	240	239956
33.1.14	4 C X 6 sq. mm. Cable	2000	Mtr	187	373539
33.1.15	4 C X 4 sq. mm. Cable	1200	Mtr	160	191470
33.1.16	3C X6 sq. mm. Cable	1000	Mtr	187	186770
33.2	<b>BUS DUCT</b>				

Item No. 1	Description 2	Qty 3	Unit 4	Rate In Rs. ( in Figure) 5	Amount (Rs.) 7
	Supply, installation, testing and commissioning of pre-fabricated sandwiched aluminium bus trunking suitable for 415 Volt 3 Phase 4 wire 50 Hz AC supply system of aluminium bus bars 100% Neutral IP 55 Protection of following KA rating complete with bends, expansion joints, fire barriers, copper flexible end connections at both ends earthing with 2 runs of copper earth as per IEC 60439 including necessary supports etc. as per specifications attached as required.				
33.2.1	2000 A, 50 KA	300	Mtr	30000	9000000
<b>34.0</b>	<b>CABLE TRAYS</b>				
	Supply & installation of following sizes of perforated MS cable trays including horizontal & vertical bends, reducers, tees, cross members and other accessories as required and duly supported from the ceiling/wall/floor with MS suspenders/supports and including painting etc. as required				
34.1	300 mm widthx50 mm deep x1.6 mmthickness	3000	Mtr	900	2700000
34.2	200 mm widthx50 mm deep x1.6 mmthickness	2000	Mtr	750	1500000
34.3	150 mm widthx50 mm deep x1.6 mmthickness	1000	Mtr	400	400000
34.4	100 mm widthx50 mm deep x1.6 mmthickness	750	Mtr	300	225000
<b>35.0</b>	<b>EARTHING</b>				

Item No. 1	Description 2	Qty 3	Unit 4	Rate In Rs. ( in Figure) 5	Amount (Rs.) 7
35.1	Earth pits with GI earth plate of size 600mmx600mmx6mm thick including all accessories , down watering GI pipes 40mm dia and providing masonry enclosure with cover plate having interlocking arrangement and watering pipe etc. with charcoal of or coke and salt) complete as required	10	Set	15000	150000
35.2	Providing & fixing GI earth strip 40mm x 6mm on surface or in recess for earth connections etc. as required	1000	Mtr	250	250000
35.3	Providing and fixing GI earth strip on walls/ trenches complete as per specifications and as required.				
35.3.1	38mmx 6mm	600	Mtr	140	84000
35.3.2	25mm x 3mm	1200	Mtr	125	150000
35.4	Providing and fixing earth wire of complete as per specifications as required.				
35.4.1	4 SWG wire	1000	Mtr	100	100000
35.4.2	6 SWG wire	2000	Mtr	75	150000
35.4.3	8 SWG wire	2500	Mtr	60	150000
<b>36.0</b>	<b>CONTROL CABLING</b>				

Item No. 1	Description 2	Qty 3	Unit 4	Rate In Rs. ( in Figure) 5	Amount (Rs.) 7
	Supply, laying, effecting proper connections, testing & commissioning of 1.5 sq.mm. PVC insulated copper multicore cables from AHU's and AC equipments to central control console				
36.1	27 core cable	1500	Mtr	836	1253365
36.2	19 core cable	1000	Mtr	639	638567
36.3	14 core cable	3000	Mtr	517	1551269
36.4	10 core cable	5000	Mtr	452	2257816
36.5	8 core cable	3000	Mtr	336	1007237
36.6	6 core cable	1200	Mtr	282	337820
36.7	5 core cable	800	Mtr	255	203780
36.8	3 core cable	600	Mtr	255	153000
36.9	2 core cable	500	Mtr	255	127500
<b>37.0</b>	<b>CONTROL CONSOLE /DESK</b>				

Item No. 1	Description 2	Qty 3	Unit 4	Rate In Rs. ( in Figure) 5	Amount (Rs.) 7
	Supplying, installation, testing & commissioning of floor mounted desk type control console cum indicating panel in the A.C. plant room containing various indications and controls for the complete air-conditioning system comprising chilling units, chilled/ Hot/ condenser water pumps, cooling towers and AHUs/ Ex. blower/ Fans etc , Hot water boiler with test push button facility. The panel shall be fabricated from minimum 1.6mm thick M.S. powder coated sheet of approved design. The air-conditioning module of the central control cum indicating panel shall contain the following accessories.				
	Status indication (ON, OFF & fault) of each compressor for each chilling machine, hot water boiler etc.				
	Push buttons and indicating lamps for remote start & stop and status indication for every nos of the water circulating pumps, Air Handling Units, Ex blower, Fans etc.				
	Push buttons and indication lamps for remote start & stop and status indication (On, Off & Fault) for every nos. cooling tower motors and low water level indication for every Nos. cooling towers.				
	Hooter and flashing lamp to indicate operation of any safety/ shut down with necessary contactors, accept, reset and test push buttons.				
	Complete wiring with copper conductor PVC insulated multicore 2.5 sq.mm stranded cable (excluding supply of cable, tray, clamps etc) from various equipments in the A.C. plant room, AHU's Terrace plant room and cooling towers etc to the control console panel as required.				

Item No. 1	Description 2	Qty 3	Unit 4	Rate In Rs. ( in Figure) 5	Amount (Rs.) 7
	<b>Complete Panel As above for Following blocks</b>				
37.2	<b>For SSB Block</b>	1	Panel	1355866	1355866
	<b>TOTAL FOR HVACWORKS</b>				455655262



	<b><u>SSB BLOCK SAFDARJANG HOSPITAL, NEW DELHI</u></b>		
	<b><u>REVISED SUMMARY SHEET FOR HVAC WORKS</u></b>		
<b>SECTION</b>	<b>DESCRIPTION OF WORK</b>		<b>AMOUNT(Rs.)</b>
<b>A</b>	<b>EQUIPMENTS</b>		<b>253461468</b>
<b>B</b>	<b>PIPING</b>		<b>44907815</b>
<b>C</b>	<b>AIR DISTRIBUTION</b>		<b>90686359</b>
<b>D</b>	<b>ELECTRICAL</b>		<b>66599620</b>
	<b>GRAND TOTAL</b>		<b>455655262</b>