

HVAC WORKS AT SBI NEW BRANCH AT SECTOR-109 , GURUGRAM					
S.NO.	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	HVAC WORK				
	AHUs AND THEIR CONTROLS				
1	Double Skin Ceiling suspended AHU With Pre Filters (2 pipe system)				
	Supply, installation, testing and commissioning of double skin construction Ceiling suspended(as per approved shop drawing and specifications) draw/blow through type chilled water Air handling units fabricated out of extruded aluminium section with 0.6 mm pre-plasticized / pre-coated Galvanised steel sheet outside & 0.6 mm plain Galvanised steel sheet inside; each complete with mixing box, low leakage aluminium aerofoil fire resistant neoprene flexible connection at outlet, pre-filter section with filters (washable type) of non woven synthetic media (efficiency 90% down to 10 microns MERV-8) , coil section having min 6 Row Deep chilled water coil of copper tube & aluminium fins construction alongwith di- electric union of suitable size (Coil shall have copper header and supporting frame work/End plates in SS 304 construction),polished SS 304 drain pan made out of 22G sheet duly insulated ,complete with squirrel cage induction motor , belt driven centrifugal forward curved fan or direct driven plug fan with vibration isolators. Cooling coil size shall be selected for a maximum face velocity of 450 feet/minute and fan outlet velocity shall be limited to 1800 FPM . Motor shall be atleast IE 2 rated suitable for 415±10% volts, 50 cycles, 3 phase AC supply, meeting criterion as per ASHRAE standard 90.1-2010 & high				
a	AHU 3000 CFM -3200 CFM 6 Row CC/ forward curved fan	No.	1		
b	AHU 2200 CFM / 6 Row CC/ forward curved fan	No.	1		
2	AIR FILTERS FOR COMMISSIONING				
	Air purification for ceiling suspended Ductable indoor units and AHU The air purification system should be suitable to reduce harmful pollutants like particulate matter (PMx), PM 2.5, allergens, pollen, smoke, bacteria, pathogens etc. based on below principle technology viz;Impingement, Polarisation and Agglomeration as a passive air It should be a slim structured unit specifically designed for integration in Return Air path of ceiling suspended indoor units, to centrally capture. It should be equivalent to Merv-14 or Higher efficiency for AHU and Ductable* Units with low pressure drop. It should have 3x working principles and it should be aluminium based or powder coated steel casing and should be self-contained. It should be a US patented technology with UL certified components. The units shall meet ANSI/ASHRAE 52.2 standards and have valid test report to verify filtration efficiency. The Basic Media of Electric Filter shall Carry Class 2 Fire Rating Listing by UL.The CAC filter/Electrostatic precipitator (ESP), which have Metal based collection plate shall not be accepted. The Supplier shall carry UL2998 certification or at least Acknowledgement letter from UL2998 for testing against Zero Ozone Emission. The system shall be integrated with the existing pre-	Nos.	2.00		
3	SPLIT/ CASSETTE TYPE AIR CONDITIONERS				
	Supplying, erection, testing and commissioning following wall mounted Split/ Root mounted cassette units of (Toshiba/ Mitsubishi/ Hitachi/ O-General/Daikin/Voltas) with cordless remote complete with all necessary fittings duly insulated with 9 mm thick O Class nitrile rubber insulation with Pipe (All coils – copper only), fan and fan motor, machine control panel improved Refrigerant Joints, .Air conditioners shall be fitted with hermetically sealed type suction cooled reciprocating or discharge cooled rotary compressor or scroll compressor. Compressor unit operating on R32/ R-410. All complete as per drawing, approval and instructions of the Architect/ Employer. Item to include powder coated outdoor stands as per the manufacturer specifications.(Rates to be inclusive of Copper refrigerant pipe with insulation up to 3 Mtr length only for Each split AC Unit) WITH DAINAGE PUPM AS REQUIRED AS PER SITE				
	1.5 TR split AC 5 star rating inverter type including all necessary fittings and mountings as specified by the manufacturer (For ATM)	Nos.	2.00		
4	EXTRA REFRIGERANT PIPING				
	Supplying and laying of Extra copper refrigerant piping with O class nitrile rubber insulation with pipe , both of size as specified by the manufacturer suitable for 1.0/1.5/ 2.0 TR Split type AC - From Indoor to outdoor Units (make as approved by Architect/ Bank)				
5	For 1.5 TR/ 1.0 TR Split AC as specified by the manufacturer	Mtr.	30.00		
	Providing and fixing drain piping up to drain as directed by the engineer incharge with all accessories e.g. elbows, unions, sockets, reducers, reducing tees, nipples etc. Complete job including cutting chiseling in walls, floor and making good of all chases/ cuts etc. and discharging the drain into a floor trap/ gully as per site conditions with insulation, both as specified by the manufacturer (make as approved by Architect/ Bank).				
6	25 mm dia PVC drain pipe for Split AC	Mtr.	30.00		
	Providing and fixing of lockable caging for outdoor unit grouted on wall or on roof with open able shutter made of 10 X 10 mm MS square bars placed vertically @ 6" c/c welded with 40 X 3 mm MS flat all- round. Item includes all necessary hardware, priming coat, synthetic enamel paint, hanger, clamps other accessories etc. All complete as per approval and instructions of the Architect/ employer.				
7	For 1.0/ 1.5/ 2.0 TR Hi Wall split units	Nos.	0.00		
8	Supplying and laying of Extra Electrical interconnecting control cable from indoor to outdoor of size as specified by the manufacturer suitable for 1.0/1.5 TR Split type AC with 2mm Thik FRLS Conduit and all other accessories etc. All complete as per approval and instructions of the Architect/ employer. (make as approved by Architect/ Bank).	Mtr.	30.00		
	Supplying, installation and commissioning of voltage stablizer of range 140-280 V for Acs (V-guard/ Servokon/ Bluebird make as approved by Architect/ Bank).(Copper Winding)				
9	For 1.0 / 1.5 Tr. Wall mount (4 kVA)	Nos.	2.00		
10	Supplying, installation and commissioning of automatic 24HRS. programmable TIMER of required capacity to run A.C. alternately (MDS / L&T / Other reputed make).	Nos.	1		
11	Pressure Independent Balancing Cum Two Way Control Valve				
12	(Automatic control for AHU unit)				

13	Supply, installation, testing and commissioning of Pressure Independant Balancing Cum Two Way Control Valve in a single body equipped with electronic modulating actuator working on 0-10 V DC, 4- 20 mA electric signal. The minimum close off Pressure of actuator must be 1.5 times shut off head of pump as per specifications of following sizes. .Valve should come to close position ,if the power supply to the actuator is cut off. The valve shall be complete with digital type modulating thermostat (with NTC sensors) which will have provision of setting room temperature.The valve system shall be complete with necessary control cabling between control transformer, valve and standalone thermostat.The valve shall be suitable for the following pipe sizes: (Make-ADVANCE / ZOLOTO/ CASTLE /LEADER OR EQUIVALENT AS APPROVED BY ARCHITECT/SBI)				
	25mm dia	Nos.	2		
	SUB-HEAD- II: VENTILATION SYSTEM				
15	Propeller Fans				
	Supplying, installing, testing and commissioning of direct driven PROPELLER FANS for exhaust/fresh 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 shall be provided with speed regulator and NC level 3M away from source shall be less than 60db. Fan selection arrangement and Electrical characteristics shall be as follows :				
	225 mm dia 900 RPM fan suitable for 240± 10% volts 50 cycles, 1 phase AC supply.				
	For pantry	Nos.	1		
	SUB-HEAD-III : CHILLED & CONDENSER WATER PIPING				
16	Chilled Water Piping				
	Supply, Installation, testing & Commissioning of MS "C" class ERW Chilled water piping conforming to IS1239/IS3589 cut to required lengths & installed with welded joints including fittings such as bends, elbows, tees, reducers, rubber gaskets, factory fabricated GI piping supports & vibration isolators, companion flanges,thermowells for sensors/thermometers & socket for BAS, painting etc. Price shall also include pressure testing.				
	The wall thickness of pipes for 200NB shall be 6.0mm & for 250NB & above shall be 8.0mm.				
	30 mm dia pipe	Rmt	30		
17	Butterfly Valves				
	Providing and fixing in position the following wafer type Butterfly Valves complete with companion flanges, nuts, bolts, gaskets etc. as required. Butterfly valves shall conform to PN -10 rating as per specifications. Quoted price shall be inclusive of insulation for chilled & hot water as per the specifications. (Make-ADVANCE / CASTLE /ZOLOTO/LEADER OR EQUIVALENT AS APPROVED BY ARCHITECT/SBI)				
	30 mm dia	Nos.	2		
18	Ball Valves (For AHU, in Cast steel construction three piece design with screwed end)				
	Providing and fixing in position the following Ball Valves as per the specifications. Ball valves shall be complete with companion flanges, nuts, bolts, gaskets etc. as required. Quoted price shall be inclusive of insulation for chilled & hot water as per the specifications and of PN-10 rating. (Make-ADVANCE / CASTLE /ZOLOTO/LEADER OR EQUIVALENT AS APPROVED BY ARCHITECT/SBI)				
	30 mm dia	No.	2		
19	Ball Valves (For Drain purpose ,in forged brass/Gun metal construction with screwed end)				
	Providing and fixing in position the following Ball Valves as per the specifications. Quoted price shall be inclusive of insulation as per the specifications and of PN-10 rating. (Make-ADVANCE / CASTLE /ZOLOTO/LEADER OR EQUIVALENT AS APPROVED BY ARCHITECT/SBI)				
	20 mm dia	Nos.	2		
20	Thermometer				
	Supply, installation, testing and commissioning of alcohol/red mercury filled 'V' form thermometer of approved make conforming to tender specifications. (For Ceiling Mounted AHU, Chiller & Condenser)	Nos.	2		
21	Pressure Gauges				
	Supply, installation, testing and commissioning of industrial type pressure gauge of approved make of dia 100 mm constructed out of SS 304 material.SS siphon shall be factory insulated with closed cell nitrile rubber in tubing form. Pressure gauges shall be fitted with a ball valve at the tube. (For Ceiling Mounted AHU, Chiller, Condenser & All Pumps)	Nos.	2		
22	Condensate Drain Piping				
	Supply, installation, testing and commissioning of condensate drain water piping of GI 'Medium' class or CPVC complete with fittings like elbows, tees, reducers, bends, flanges, supports painting etc. as required conforming to tender specifications and of following sizes.				
	20 mm dia pipe	Rmt	50		
	SUB-HEAD-IV : AIR DISTRIBUTION				
23	Rectangular GI Ducting (Factory made)				

	Supply, fabrication, Installation, testing and commissioning of factory fabricated rectangular ducts using G.I Sheets (120GSM coating). The price shall include factory fabricated TDF flanges, turning vanes, splitter dampers, supports (factory fabricated, full threaded GI rod/hangers & G.I slotted channel), sealant, neoprene gasket, access door etc. The joints shall be with least leak and shall be tested with pressure testing machine of approved vendor. Corrective action shall be taken, if the leakage is more than the permissible limit. Report shall be generated after satisfactory testing of ducts for leakage and shall be duly signed by the client's /PMC representative before giving clearance for the thermal insulation. Gaskets used shall have low VOC content and should comply LEED requirement. (GLENSTORMS / ZECO / DUCTOFAB OR EQUIVALENT AS APPROVED BY ARCHITECT/SBI) or equivalent as PER THE SPECIFICATIONS ABOVE: Make be approved by Architect/Bank before installation.				
	24 gauge galvanized sheet steel (TDF 01- 750mm)	Sqm	98		
	Note :- The Duct shall be manufactured as per SMACNA Standard but the minimum guage shall be 24 G.				
24	GSS VOLUME CONTROL DAMPER				
	Supply, installation, testing and balancing of opposed multiblade box type GI volume control damper within ducts to be provided with suitable links, levers and quadrants for manual control of volume of air flow and for proper balancing of the air distribution system as per approved shop drawings & specifications. (All AHUs, fan sections VCD at machine outlets shall be included in the equipment cost only) (GLENSTORMS/ CYNOR /AIRMASTER OR EQUIVALENT AS APPROVED BY ARCHITECT/SBI) or equivalent as PER THE SPECIFICATIONS ABOVE: Make be approved by Architect/Bank before installation.	Sqm	1.75		
25	LINEAR GRILL (FIXED BAR)				
	Supply, installation, testing & balancing of removable core type, continuous, linear, fixed bar extruded aluminium powder coated Supply Air / Return Air / Exhaust Air grills, normal flow, 15° angle one way / two way deflection with all sides flanges. Blade thickness shall be minimum 5mm in front and 1.0 mm in rear side. Grills shall be supplied in accordance with specifications and approved shop drawings. (GLENSTORMS/ CYNOR /AIRMASTER OR EQUIVALENT AS APPROVED BY ARCHITECT/SBI)				
	200 mm/150mm/100mm High	Sqm	4		
26	VCDs FOR LINEAR GRILL SUPPLY AIR COLLARS				
	Supply, installation, testing & balancing of key operated extruded Aluminium volume control dampers in black mat finish for supply/return/exhaust air duct collars as per approved shop drawings and specifications. (GLENSTORMS/ CYNOR /AIRMASTER OR EQUIVALENT AS APPROVED BY ARCHITECT/SBI) or equivalent as PER THE SPECIFICATIONS ABOVE: Make be approved by Architect/Bank before installation.	Sqm	3		
27	FRESH AIR INTAKE LOUVERS				
	Supply, installation, testing & balancing of Fresh air Extruded Aluminium intake louvers with bird screen and opposed blade box type GI volume control damper complete as per specification & approved shop drawings. Construction/profile of the louvers shall give a protection against the rain and suitable for fixing in the external facade of the building. (GLENSTORMS/ CYNOR /AIRMASTER OR EQUIVALENT AS APPROVED BY ARCHITECT/SBI) or equivalent as PER THE SPECIFICATIONS ABOVE: Make be approved by Architect/Bank before installation.	Sqm	2		
28	SUPPLY/ RETURN AIR DIFFUSERS				
	Supply, installation, testing and balancing of square, rectangular and round extruded aluminium powder coated Supply/ Return Air diffusers. Diffuser shall be with spring loaded removable core type distribution grid, key operated aluminium black matt finish dampers. Diffusers shall be supplied in accordance with specifications and approved shop drawings. (GLENSTORMS/ CYNOR /AIRMASTER OR EQUIVALENT AS APPROVED BY ARCHITECT/SBI) or equivalent as PER THE SPECIFICATIONS ABOVE: Make be approved by Architect/Bank before installation.	Sqm	2.5		
	Samples of grills / diffusers will have to be submitted to the SBI/Architect/Consultant for approval on size / shape / shade / colour before ordering.				
	SUB-HEAD-V: THERMAL INSULATION				
29	Thermal Insulation:				
	Supply & installation of thermal insulation on ducts with approved sample of black colour factory laminated fibre glass cloth on closed cell Aluminium foil faced XLPE duct insulation with density 40-60 Kg/ Cum for density 25-30 Kg/Cum for XLPE, class 'O' complete as per specifications. All longitudinal and transverse joints shall be sealed with 50mm wide and 3mm thick or as per standard /XLPE tape. The cost shall be inclusive of Low VOC adhesive and should comply LEED requirement. (Paramount/Canni)				
	13mm thick (Supply air Ducts in return air path)	Sqm	105		
30	Acoustic lining (For Ducts)				
	Supply & Installation of acoustic lining within supply and return air ducting using Open cell elastomeric insulation/XLPE insulation with 140-160 Kg/cum. density. All ducts shown cross hatched on the approved shop drawings shall be provided with acoustic lining as per the specifications. The cost shall be inclusive of low VOC adhesive and should comply LEED requirement.				
	15 mm thick	Sqm	12		
31	Chilled water pipe insulation				
	Supply, Installation & Testing of below mentioned thickness of insulation with factory laminated black colour fibre glass cloth on closed cell elastomeric nitrile rubber/ Aluminium foil faced XLPE insulation with density 40-60 Kg/ Cum for nitrile rubber & density 25-30 Kg/cum for XLPE, class 'O' material, in tubing form/flat sections for chilled water piping (including fittings, valves & flanges) to be installed in risers, branch piping and laid on terrace as per specifications and approved shop drawings. All longitudinal and transverse joints shall be sealed with 50mm wide and 3mm thick Nitrile rubber /XLPE tape. The cost shall be inclusive of low VOC adhesive and should comply LEED requirement.				

	Quoted price shall be inclusive of adhesive and UV/mechanical protection using UV resistant paint/starbond coating spread over Glass cloth as per specifications.				
	32 mm thick insulation suitable for following pipe sizes				
	30 mm dia	Rmt	45		
32	AHUs Drain Pipe Insulation:				
	Supplying & installation of 9 mm thick closed cell nitrile rubber insulation with approved sample of black colour factory laminated fibre glass cloth with density 40-60 Kg/ Cum/ Aluminium foil faced XLPE insulation with density 25-30 Kg/Cum, class 'O' complete as per specifications in the form of pre-formed pipe sections and complete in all respects as per specifications and drawings on condensate drain pipes of the following sizes:				
	Quoted price shall be inclusive of adhesive and UV/mechanical protection using UV resistant paint/starbond coating spread over Glass cloth as per specifications.				
	25 mm dia	Rmt	40		
	SUB-HEAD-VI : ELECTRICAL WORK				
33	The no. of AHU control panels shall be as per KW ratings given :				
	AHU starter panel for Motor with wiring with all respect.	Nos.	2		
	SUB-HEAD-VII : COMMISSIONING & HANDING OVER OF THE SYSTEM				
34	Submission of Commissioning document (in 3 hard and soft copies) duly approved by client's operation team and Project Manager. Minimum documents required are Equipment commissioning reports, water balancing reports, Air balancing report and room temperature monitoring data (Every 6 hours for 3 days), Particle count test reports for OT's, Indoor air quality report.				
	Current drawn by equipment & overload trip test report.				
	Air balancing & air flow measurements shall be done by Digital Hood & velocity matrix only.				
	Water balancing by the OEM and shall be done by ultrasonic digital meter only.				
	Overpressure verification for staircases and lift wells				
	Fire damper operation				
	System static pressure measurement for AHUs, Ventilation fans digital pitot tubes only.				
	Measurement of Power Consumption and efficiency verification.				
	Indoor air quality testing.	Job	1		

SUMMARY		
		GRAND TOTAL SAY RS. #REF!
(Note : Tax should be paid extra as applicable)		
	Pages : 1 to 11	Authorised Registered Signature
	Place :	
	Date :	
NOTES- * Material should be disposed off within 24hours. * Shifting of office table and furniture etc. during the concurrence of work will be in scope of the Contractor. * Green safety net to be installed by the contractor on external facade from top to bottom without any additional cost. * Wherever required, the contractor will provide temporary plywood partition inside the premises for separating office area from area of repair without any additional cost.		
	Items of work under this Contract shall be executed strictly to fulfill the requirements laid down in the technical specifications. Equipment type, material specifications, methods of installation and testing and type of control shall be in accordance with the specifications, approved shop drawings and the relevant Indian Standards. The unit rate for all equipments or materials shall include cost in RUPEES including all applicable taxes (excl. GST) and duties forwarding, freight, insurance and transport upto site, storage, installation, testing, balancing, commissioning and other related works required. The quoted rates shall also include the following:	
i.	Wastage on materials and labour.	
ii.	Loading, transporting, unloading, handling/double handling, hoisting to all levels, setting, fitting and fixing in position, protecting, disposal of debris and all other labour necessary in and for the full and entire execution and for the job in accordance with the contract documents, good practice and recognize	
iii.	Liabilities, obligations and risks arising out of Conditions of Contract.	
iv.	All requirements of Specifications, whether such requirements are mentioned in the item or not. The Specifications and Drawings where available, are to be read as complimentary to and part of the Schedule of Quantities and any work called for in one shall be taken as required for all.	
v.	In the event of conflict between Schedule of Quantities and other documents including the Specifications, the most stringent shall apply. The interpretation of the Owner/Consultant/Project Manager shall be final and binding.	
vi.	All equipments, quantities and technical data indicated in this Schedule are for the Contractor's guidance only, these are based on the documents prepared by the Consultant. This schedule must be read in conjunction with other documents. The Contractor shall be paid for the actual quantity of work executed by him	
vii.	This Schedule shall be fully priced and the extensions and totals duly checked. The rates for all items shall be filled in INR including NIL items.	
viii.	No alteration whatsoever is to be made to the text or quantities of this Schedule unless such alteration is authorised in writing by Consultant. Any such alterations, notes or additions shall, unless authorized in writing, be disregarded when tender documents are considered	
7	In the event of an error occurring in the amount of the Schedule, as a result of wrong extension of the unit rate and quantity, the unit rate quoted by the tenderer shall be regarded as firm and the extensions shall be amended on the basis of rates.	
8	Any error in totaling in the amount column and in carrying forward total shall be corrected. Any error, in description or in quantity, omission of items from this Schedule shall not vitiate this Contract but shall be corrected and deemed to be variation required by the Consultant/Project Manager.	
9	The Contractor shall procure and bring Materials/Equipment to the site only on the basis of drawings approved for construction and shop drawings and not on the basis of Schedule of Quantities which are provisional only. This also applies to the Contractor's requisition for Owner supplied materials.	
10	HVAC contractor shall clearly mention the scope of electrical work involved.	
11	Static pressure for indoor units/fan motors shall be checked & confirmed by the vendor at the time of quote & reconfirmed at award & prior to ordering the equipment without any price implication.	