



HVAC OFFER - KFC BIAL		BOQ				FINAL BILL				
SR. NO.	DESCRIPTION OF WORKS	UNIT	QUANTITY	Supply RATE	Installation Rate	Amount (Supply + Installation)	Final QUANTITY	Supply RATE	Installation Rate	Amount (Supply + Installation)
A	AHU, CHW PIPING DRAIN PIPNG & CONTROL PANEL									
1	AIR HANDLING UNITS CHILLED WATER TYPE. Supply, Assembly, Installation, Testing and Commissioning of Ceiling Suspended Double skin cabinet type AHU with preplasticised / powder coated GS Sheets of 22G (outside) / plain GS 20G (inside) with 50mm thick Puff / 42 kg/cu.m density / Class 'O' / CFC free sandwiched insulation hollow sections framework with thermal break profile. fan section with belt driven DIDW Forward Corve Centrifugal Fan blower & TEFC IP 55 motor, spring isolators. Motor of efficiency class IE3, shall be suitable for 415+ 10% volts, 3 phase 50 Hz AC supply.									
	Coil section with 8Row/12FPI Ch.w.Cooling coil with 12.5/15 mm dia tubes, min. 24 gauge thick with sine wave aluminium fins, firmly bonded to copper tubes assembled in zinc coated steel frame, cooling coil shall be integrally finned type. Coil shall be selected for a face velocity of 500 ft / min. Cooling coil shall be suitable for entering chilled water temperature at 6 deg C and leaving temperature of 13.33 deg C (1.7 gpm /TR). ADP & Chilled water inlet should be as per the design & on Actual basis. Insulated drain tray with liberal drain connections on either side, etc. 22 G SS -304 with 19 mm thick / 40 kg/m3 density, Nitrile rubber Class O to be provided. Cooling coils shall be as per AHRI approved selection.									
	Filter section with MERV-13 , vibration isolators, non-flammable flexible duct connectors, test port, all accessories etc., Insulated drain pipe connection, door limit switch, Fire retardant double canvass connections, gear type outlet volume control dampers (OEM) double skin aerofoil blades at AHU outlet, access doors with limit switch as per project requirement, complete as per specifications shall be included.									
	AHU Electrical Panel / control panel MCCB single Phase preventor, phase indicating lights, ON/OFF status, non polarised NO-NC contacts for tripping on signal from Fire Dampers / Fire Alarm Panel. . Copper power from starter panel to motor & control cabling of required size upto the thermostat / sensor etc. to be provided.									
	Rate should be including unloading, lifting and shifting at desired location. Spring isolator hangers to be provided for AHU, Control panel with 5 mtr Elec cabling .									
1.1	<b>Ceiling Suspended Side discharge</b> 1150 CFM / 2.4 TR / 6/8R/12FPI Chilled Water Cooling Coil / 15mm ESP	Nos.	1	1,95,000	15,000	2,10,000	1.00	1,95,000	15,000	2,10,000
2	<b>AHU Valve Station</b> Complete chilled water piping station in Loft mounted AHUs / for CSU to include Followings. CHW supply line at AHU /CSU inlet- 1No Butterfly valve, 1No. Strainer, 1No. glycerin filled Pressure Gauge with syphon and valve, thermometer, ½" drain connection with ball valve.									

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2.1	CHW return line at AHU/CSU outlet- 1 Nos Butterfly valve,1 No. Two way valve with actuator, actuator bypass line with 1 No Butterfly valve. 1No. balancing valve, 1No.glycerin filled Pressure Gauge with syphon and valve, Thermometer withwith control cabling, , Auto Air vent. Chilled water & drain pipes to be insulated with 50 mm Armaflex class 'O' nitrile rubber / 60 kg/m3 density & finished with 'UNISHIELD' fire retardant coating & mechanical protection. Valves are to be PN16 rating flanged/threaded. for 25mm dia ( WITH BYPASS ACROSS VALVE STATION)	Sets	1	72,500	20,000	92,500	1.00	72,500	20,000	92,500
3	<b>INSULATED CH.W. PIPING</b> Supply, fabrication, assembling, laying, testing and balancing of chilled water piping & Accessories as per specifications & complete with: Mild Steel Heavy Duty "C" Class Pipes as per IS 1239 Part A & B & IS 3589 with all heavy duty fittings such as bends, elbows, tees etc. and complete with vibration isolators, hangers, full round PU supports. Chilled water piping, shall be duly insulated with required thk, Closed Cell foam Class O with min.density 60kg/m3 with minimum R Value 4.1/inch and thermal conductivity -0.035 w/m.k insulation pipe sections stuck with special adhesive and finished with vapour barrier and 2 coats of weatherised rubber paint for Chilled water piping without puncturing the vapour barrier complete as per specifications and clad with 26 G Aluminium sheet without puncturing the vapour barrier.									
3.1	for 25mm dia with 40 mm thick insulation	Rmt.	10	1,200	400	16,000	-	1,200	400	-
4	<b>Hard PVC drain piping</b> with elbows, bends, tees, cleanouts etc. with O class Nitrile tubular insulation - 13mm thk / min. 60 kg/m3 density.									
4.1	25 mm	Rmt.	5	210	150	1,800	3.50	210	150	1,260
<b>B</b>	<b>DUCTING WORKS</b>									
<b>1.0</b>	<b>SHEET METAL DUCTING -</b> Rectangular / Circular Ducting in Galvanised Steel / oval duct Supply, installation and Testing of factory fabricated galvanised sheet metal ducts									
0.1	0.63 mm (24 SWG) GSS ducting (601mm-750mm)	M <sup>2</sup>	85	1,400	350	1,48,750	109.14	1,400	350	1,90,990
0.2	0.80 mm (22 SWG) GSS ducting (751mm-1500mm)	M <sup>2</sup>	-	1,600	400	-	-	1,600	400	-
0.3	1.00 mm (20 SWG) GSS ducting (1501mm-2250mm) - For plenum	M <sup>2</sup>	5	1,800	500	11,500	10.64	1,800	500	24,481
0.4	1.25 mm (18 SWG) GSS ducting (2251mm and above) ( For Kitchen Exhaust, it shall have ms welded at joint as per BIAL guidelines)	M <sup>2</sup>	55	2,250	550	1,54,000	45.47	2,250	550	1,27,313
<b>C</b>	<b>INSULATION</b>									
<b>1.0</b>	<b>Thermal Insulation of Ducts</b> Inside ducts thermal Insulation with adhesive 13 mm thick closed cell nitrile rubber Class "O" & all joints of the insulation shall be further covered with 50mm wide 3mm thick self-adhesive tape made of similar material.	M <sup>2</sup>	145	500	250	1,08,750	154.61	500	250	1,15,955
<b>2.0</b>	<b>Acoustic Lining of Ducts</b> Acoustic insulation with 15 mm thick with adhesive open cell nitrile rubber Class "1" ( arma sound ] as shown in the drawing.	M <sup>2</sup>	10	1,150	250	14,000	7.91	1,150	250	11,070

SR. NO.	DESCRIPTION OF WORKS	UNIT	QUANTITY	SUPPLY RATE	INSTALLATION RATE	Amount (Supply + Installation)	Final QUANTITY	SUPPLY RATE	INSTALLATION RATE	Amount (Supply + Installation)
D	AIR DISTRIBUTION OUTLET									
1	Supply & Installation of Supply air / Return air Aluminium extruded Powder Coated 200 mm width grille with end flanges ( Make : Cosmos / System Air / Air Product / Equivalent. )	RMT	8	1,250	300	12,400	5.00	1,250	300	7,750
2	Supply & Installation of Supply air / Return air Aluminium extruded Powder Coated linear bar Grille 0/15/45deg two way deflection of size 100/150/200 mm with end flanges ( Make : Cosmos / System Air / Air Product / Equivalent. )									
2.1	200x200mm with damper	Nos.	2	1,250	350	3,200	2.00	1,250	350	3,200
2.2	300x300mm with damper	Nos.	1	1,850	550	2,400	1.00	1,850	550	2,400
2.3	300x200mm with damper	Nos.	2	1,510	400	3,820	2.00	1,510	400	3,820
2.4	400x200mm with damper	Nos.	2	1,800	400	4,400	2.00	1,800	400	4,400
2.5	500x200mm with damper	Nos.	1	2,150	500	2,650	1.00	2,150	500	2,650
2.6	700x200mm with damper	Nos.	1	2,450	600	3,050	1.00	2,450	600	3,050
3	Opposed blade dampers black powder coated vertical blade type for supply air collar. The damper should be gear operated type. ( Make : Cosmos / System Air / Air Product / Equivalent. )	M <sup>2</sup>	1	4,250	1,500	5,750	1.40	4,250	1,500	8,050
4	Volume Control Dampers made out of 100 x 40 x 1.55 mm thick galvanized steel Rectangular type VCD	M <sup>2</sup>	1	7,650	2,400	10,050	1.55	7,650	2,400	15,527
	Oval / Elliptical type VCD	M <sup>2</sup>	-	8,650	2,500			8,650	2,500	
	<b>TOTAL</b>									
	<b>TOTAL (SUPPLY + INSTALLATION)</b>					8,05,020				8,24,415

KFC+UB @ T2 BIAL - HVAC OFFER FOR SEATING AREA

HVAC BOQ

Sr. No.	Description Items	Unit	Qty	BOQ			FINAL BILL		
				Supply Rate	Installation Rate	Total Amount	Supply Rate	Installation Rate	Total Amount
<b>Note:</b>	Prices shall be based on supply, installation, testing & commissioning (SITC) at site including all taxes, duties, transportation & insurance etc.								
<b>1</b>	<b>DX DUCTABLE UNITS:</b>								
<b>1.1</b>	<b>DX DUCTABLE UNITS :</b>								
a	SITC of Ductable Split units with Inverter compressor and R407c refrigerant gas. The units should be complete with indoor unit, condensing unit, controls, control panel, wiring, refrigerant piping, gas charging, etc. The control cabling and insulated refrigerant piping should be based on the distance between indoor unit and condensing unit being 50 Mtr/Ckt. Unit shall have corded remote. Refrigerant piping slope to be maintained towards condensing unit. 5.5 TR Ducted unit with condensing units	No.	1	1,80,000	20,000	2,00,000	1,80,000	20,000	2,00,000
<b>1.2</b>	<b>REFERERANT PIPING WITH 13MM INSULATION</b>								
a	SITC of Refrigerant piping with pressure testing, vacuum & refrigerant charging with 13mm thick nitrile rubber tubular insulation 5.5 TR Ducted unit with condensing units	Rmt	50	1,600	350	97,500	1,600	350	99,739
<b>1.3</b>	<b>POWER &amp; CONTROL CABLE</b>								
a	Supply, laying, dressing, testing and commissioning of 1100V grade copper conductor, galvanized steel wire/strip armoured XLP, PVC sheathed power and control cables of following sizes to be laid on trays/ wall/racks including clamping and earthing as per Specification. Cabling to be provided from starter panel to the individual unit including necessary termination.	Rmt	5	550	200	3,750	550	200	-
b	Power Cabling between the MCB's/MCCB's and the Air Conditioning unit Control Cabling between indoor & outdoor units	Rmt	55	200	75	15,125	200	75	-
<b>1.4</b>	<b>FRAME WORK:</b>								
a	Supply, fabrication, installation of MS base frame /platform for outdoor units as mentioned above complete with vibration isolation pads, supports, hangers, railing, brackets etc. Construction as approved by Architect / Consultant. Apply 2 coats of paint Finish painting to be as approved by Architect. Outdoor unit structure with access ladder to be provided by A.C contractor	No	1	7,500	2,000	9,500	7,500	2,000	9,500
<b>1.5</b>	<b>CANVAS CONNECTION</b>								
a	SITC of Flexible connections between mouth piece of Fan and initial piece of ducting with inspection zip. Flexible connections shall be double thickness non-flammable material (Fire retardant type). For DX Ductable	No	1	2,450	1,000	3,450	2,450	1,000	3,450
<b>Note:</b>	All cables & conduits to be FRLS.								

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Sr. No.	Description Items	Unit	Qty	Supply Rate	Installation Rate	Total Amount	Final Qty	Supply Rate	Installation Rate	Total Amount	
	MCCB's & earthing of required rating & sizes shall be provided by Electrical contractor.										
	<b>SUB-TOTAL</b>					<b>3,29,325</b>				<b>3,12,689</b>	
<b>2</b>	<b>SHEET METAL WORKS:</b>										
<b>2.1</b>	<b>FACTORY FABRICATED G.I RECTANGULAR DUCT</b>										
	Supply, Fabrication, Testing, and Commissioning of Factory Fabricated GI Sheet Metal 120GSM Rectangular boxed ducting, Plenums, Cows, Elbows with turning vanes, Splitters, Reducers, Flanges, Collars etc as per IS and Installation as per SMACNA standards, The complete ducting shall be provided with MS Supports, Rods, Angles, Flanges, Bracing, Rubber Gaskets, Wooden frames, Canvas Connections, etc. as per drawings and specifications. <b>All ducts has to be powder coated by HVAC contractor, sample and color code to be presented for the validation of Client / Architect.</b>										
	<b>GI Sheet Makes : Tata, Jindal, SAIL, Ispat</b>										
	<b>Make: Rola Star, Zeco &amp; Ductofab</b>										
a	18 Gauge GI Sheet Metal Duct (Above 2251mm & Plenum)	Sq.mtr	RO	1,450	450		RO	1,450	450		
b	20 Gauge GI Sheet Metal Duct (1501-2250mm)	Sq.mtr	RO	1,250	450		RO	1,250	450		
c	22 Gauge GI Sheet Metal Duct (751-1500mm)	Sq.mtr	RO	1,150	400		RO	1,150	400		
d	24 Gauge GI Sheet Metal Duct (0-750mm)	Sq.mtr	25	1,025	300	33,125	-	1,025	300	-	
<b>2.2</b>	<b>FACTORY FABRICATED G.I FLAT OVAL DUCT</b>										
	Supply, Fabrication, Testing, and Commissioning of Factory Fabricated GI Sheet Metal 120GSM Exposed Flat Oval ducting, Elbows with turning vanes, Splitters, Reducers, Collars etc as per IS and Installation as per SMACNA standards, The complete ducting shall be provided with MS Supports, Rods, Angles, Flanges, Bracing, Rubber Gaskets, Wooden frames, Canvas Connections, etc. as per drawings and specifications. <b>All ducts has to be powder coated by HVAC contractor, sample and color code to be presented for the validation of Client / Architect.</b>										
	<b>GI Sheet Makes : Tata, Jindal, SAIL, Ispat</b>										
	<b>Make: Rola Star, Zeco &amp; Ductofab</b>										
a	18 Gauge GI Sheet Metal Duct (Above 2251mm & Plenum)	Sq.mtr	RO	2,450	850		RO	2,450	850		
b	20 Gauge GI Sheet Metal Duct (1501-2250mm)	Sq.mtr	RO	2,250	750		RO	2,250	750		
c	22 Gauge GI Sheet Metal Duct (751-1500mm)	Sq.mtr	35	1,600	400	70,000	-	1,600	400	-	
d	24 Gauge GI Sheet Metal Duct (0-750mm)	Sq.mtr	40	1,400	400	72,000	62.54	1,400	400	1,12,577	
<b>2.3</b>	<b>FACTORY FABRICATED G.I ROUND DUCT</b>										

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	Supply, Fabrication, Testing, and Commissioning of Factory Fabricated GI Sheet Metal 120GSM Exposed Round ducting, Elbows with turning vanes, Splitters, Reducers, Collars etc as per IS and Installation as per SMACNA standards, The complete ducting shall be provided with MS Supports, Rods, Angles, Flanges, Bracing, Rubber Gaskets, Wooden frames, Canvas Connections, etc. as per drawings and specifications. <b>All ducts has to be powder coated by HVAC contractor, sample and color code to be presented for the validation of Client / Architect.</b>									
a	<b>GI Sheet Makes : Tata, Jindal, SAIL, Ispat</b> <b>Make: Rola Star, Zeco &amp; Ductofab</b> 24 Gauge GI Sheet Metal Duct (0-750mm)	Sq.mtr	10	1,400	400	18,000	3.89	1,400	400	6,997
<b>2.4</b>	<b>EXTRUDED ALUMINIUM CEILING GRILLES</b> Supply, Installation, Testing and Balancing of Powder coated aluminium linear supply air grilles complete with removable inner core as per approved shop drawing and specifications. The area of grille can be of any geometrical shape (Square / Rectangular / Linear). The grilles shall be with 15/30/45° deflections as per requirement. The Colour shall be decided and approved by client and architect.									
a	<b>Make: Cosmos / Ruskin Titus / Air Master</b> Square / Rectangular / Linear Grille	Sq.mtr	1	6,850	2,500	9,350	0.60	6,850	2,500	5,610
<b>2.5</b>	<b>EXTRUDED ALUMINIUM SQUARE DIFFUSER</b> Supply, Installation, Testing and Balancing of Powder coated aluminium round diffuser for gypsum ceiling complete with removable inner core as per approved shop drawing and specifications. The Colour shall be decided and approved by client and architect.									
a	<b>Make: Cosmos / Ruskin Titus / Air Master</b> 225x225mm Neck size with collar damper round diffuser	Nos	4	1,650	500	8,600	11.00	1,650	500	23,650
<b>2.6</b>	<b>MULTI LEAF VOLUME CONTROL DAMPER</b> SITC of opposed blade aerofoil type 1.2 mm thick Anodized Aluminium volume control dampers for ducts shall be provided with concealed gears, plastic operator and quadrants for manual control of volume of air flow and for proper balancing of the air distribution system as per the approved shop drawings and specifications.									
	<b>Make: Cosmos / System Air / Air Master</b>									
<b>2.7</b>	<b>SPIGOT DAMPER FOR ELLIPTICAL DUCT</b> Supply, installation and testing of galvanized steel construction dampers for circular ducts ( VCD ) within ducts provided with suitable lever and quadrants for manual control of volume of air flow and for proper balancing of the air distribution system.									
		Sq.mtr	1	2,150	500	2,650	0.47	2,150	500	1,233

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				Supply Rate	Installation Rate	Total Amount	Supply Rate	Installation Rate	Total Amount
	Make: Cosmos, Air Master & System Air								
2.7	OPPOSED BLADE DAMPER SITC of Aluminium Opposed blade dampers black powder coated vertical blades type for supply air collar. The damper should be gear operated type.	Sq.mtr	1	4,450	1,500	2,975	4,450	1,500	10,115
	Make: Cosmos / System Air / Air Master								
2.8	INSULATED CONDENSATE DRAIN PIPE SITC of UPVC pipes for condensate drain cut to required lengths and installed with all screwed joints and providing & fixing in position the necessary elbows, tees & reducers along with 6mm nitrile rubber insulation.								
	Make: Supreme, Prince, Astral								
a	25 mm Dia	Rmt	30	210	100	9,300	210	100	5,294
2.9	DRAIN PUMP SITC of Drain Pump will all necessary accessories and supports. Pump shall have ability to lift the water atleast 600mm from base level.	No	1	9,000	3,000	12,000	9,000	3,000	-
	Make: Aspen								
2.10	FLUSHING OF AIR (TO MEET IGBC REQUIREMENT) After construction ends on site, prior to occupancy and with all interior finishes installed, a building flush out should be performed as per LEED requirement. The purpose of this flushing out is to get rid of particulate matter and VOCs produced by particle-emitting construction materials, furnishings, interior finishes and cleaning agents. The cost of all three floor shall be included.	Lot	1	15,000	5,000	20,000	15,000	5,000	20,000
	NOTES:								
	The ducting support should be as per tender specification and additional supports are to be provided by Contractor as decided by Consultant.								
	Muslin cloth cover for all air outlets during construction.								
	Pressure testing of complete duct work as per DW/ SMACNA standard.								
	Silicon sealant for longitudinal & transverse joints as per specification.								
	Diffusers & grilles shall be powder coated as per color approved by Architect.								
	SUB-TOTAL					2,63,500			1,85,475
3	THERMAL & ACOUSTIC INSULATION:								
3.1	THERMAL INSULATION								



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	Supply & fixing of Thermal insulation for supply air duct using class " O " Closed cell nitrile rubber with anti-microbial coating on it. Insulation shall have Thermal conductivity of 0.033 W/(m.K) and water vapor permeance of 0.10. Joints should be sealed with 50 mm wide 3 mm thick self adhesive tape. The insulation shall be stick with recommended adhesive of low VOC / water soluble type.									
a	<b>Make: Armaflex &amp; K-flex</b> 13mm thick	Sq.mtr	100	500	200	70,000	51.08	500	200	35,755
<b>3.2</b>	<b>ACOUSTIC INSULATION</b>									
	Supply & fixing acoustic insulation for ducting using Class "1" open cell elastomeric insulation of 10mm thick Nitrile rubber insulation adhesive, longitudinal & transverse joints sealed with adhesive in neat & clean manner. Material shall be processed Nitrile Rubber foam with anti-microbial protection. Insulation shall have thermal conductivity of 0.047 W/(m.K) and density of 140 - 180 kg/m³. The insulation shall be stick with recommended adhesive of low VOC / water soluble type.									
a	<b>Make: Armaflex &amp; K-flex</b> 10mm thick <b>Out door stand as per site requirement as per BIAL requirement it 1meter raised base</b>	Sq.mtr nos	10	1,150	400	15,500	11.46	1,150	400	17,769
	<b>Note:</b> Insulation work to be coordinated with other agencies and repair to be included by contractor as per site requirement. Vendors to take care of the installation, if any damages takes place the vendor to repair or replace and hand over to clients in good and acceptable condition. Thermal insulation shall be internal for Elliptical / Exposed ducting.									
	<b>SUB-TOTAL</b>					85,500				71,024
	<b>GRAND TOTAL</b>					6,78,325				5,69,188