

**VOLUME 02**  
**OF**  
**Heating Ventilation And Condition**

A **Basement Mechanical Ventilation**

The Contractor shall supply and Install the following:-

Item	Description	Unit	Qty	Rates (Kshs.) VAT INCL	Costs (Kshs.)
A1.01	<b>Extract fan:</b> IN-Extract fan capable of a volume flow rate of 23000m <sup>3</sup> /h against a pressure drop of 300N/m <sup>2</sup> <b>WITH SILENCER</b> . Fan to be an aerofoil axial flow fan complete with fan speed regulator, phase protection, overload protection, supports to be mounted in the return duct, with anti-vibrations mountings and all other accessories. Fan to be as casual Box HB 71 T4 (A2:6) or equal and approved equal. The fans MUST be Eurovent Certified and in accordance to BS EN 13141	No.	2		
A1.02	<b>Extract fan:</b> IN-Extract fan capable of a volume flow rate of 35000m <sup>3</sup> /h against a pressure drop of 300N/m <sup>2</sup> <b>WITH SILENCER</b> . Fan to be an aerofoil axial flow fan complete with fan speed regulator, phase protection, overload protection, supports to be mounted in the return duct, with anti-vibrations mountings and all other accessories. Fan to be as Fan to be as casual Box HB 90 T4 (A6:3) or equal and approved equal. or approved equal. The fans MUST be Eurovent Certified and in accordance to BS EN 13141	No.	1		
A1.03	<b>Toilet fan:</b> Extract fan capable of a volume flow rate of 1800m <sup>3</sup> /h against a pressure drop of 65N/m <sup>2</sup> <b>WITH SILENCER</b> . Fan to be an axial flow fan complete with fan speed regulator, phase protection, overload protection, IP-55 motor protection cage, supports to be mounted to the ceiling, protection guard at th inlet end and deflector at the outlet, with anti-vibrations mountings and all other accessories. Fan to be as casual or approved equal. The fans MUST be Eurovent Certified and in accordance to BS EN 13141	No.	2		-

Item	Description	Unit	Qty	Rates (Kshs.) VAT INCL	Costs (Kshs.)
A1.04	<p><b>JET fan:</b>2 Speed Jet Fan capable of a volume flow rate of 8050/4025m<sup>3</sup>/h against a THRUST of 47/23.5N . Fan to be complete <b>WITH SILENCER</b>. Fan to be complete with fan speed regulator, phase protection, overload protection, supports to be mounted in the return duct, with anti-vibrations mountings and all other accessories. Fan to be as Casal JFC 400 T2/T4 UN or approved equal. The fans <b>MUST</b> be Eurovent Certified and in accordance to BS EN 13141</p>	No.	8		
A1.04	<p><b>JET fan:</b>2 Speed Jet Fan capable of a volume flow rate of 8690/4345m<sup>3</sup>/h against a THRUST of 47/23.5N . Fan to be complete <b>WITH SILENCER</b>. Fan to be complete with fan speed regulator, phase protection, overload protection, supports to be mounted in the return duct, with anti-vibrations mountings and all other accessories. Fan to be as Casal JFC 400/H T2/T4 UN or approved equal. The fans <b>MUST</b> be Eurovent Certified and in accordance to BS EN 13141</p>	No.	4		
A1.05	<p><b>Control Panel:</b> Carbon Monoxide detection and exhaust fan control shall be provided as Macurco SS103-10A system. This System shall use CS102A or SS102HC-1 carbon monoxide (CO) to voltage transducers that measure the level of CO and provide this information to the SS103-10A in an analog mode: voltage. This SS103-10A control panel shall provide three levels of fan or alarm control relays. These relays (N.O.) shall be for pilot duty only and capable of switching 10 A loads up to 240 VAC.</p>	No.	3		

Item	Description	Unit	Qty	Rates (Kshs.) VAT INCL	Costs (Kshs.)
A1.06	<b>Carbon Monoxide detectors</b> as Macurco CS102A. All power for the CS102A transducers shall be provided, via unshielded four conductor cable, from the SS103 control panel. The CS102A carbon monoxide (CO) to voltage transducers shall measure the the level of CO and provide this information to the SS103-10A in an analog mode: voltage. The CO to voltage transducers (CS102A) shall mount in standard electrical boxes (4S) and operate on low voltage. the detectors should come complete with cables to connect to the panel and the fans.	No.	6		
A1.07	<b>Toilet EXTRACT DISC:</b> 250mm DIAMETER Aluminium Powder coated linear Diffusers with damper complete with adapter box to connect to 150mm flexible duct including 1.5m Long Flexible duct and connectors	No.	30		
A1.08	<b>EXTRACT REGISTERS:</b> 1000x400mm Aluminium Powder coated linear Diffusers with damper complete with adapter box to connect to 300mm flexible duct including 900mm Long Flexible duct and connectors	No.	40		
A1.09	<b>Transfer Grilles-floor/wall mounted:</b> 1000x 400mm fabricated from GI metal spray painted to Engineers approval	No.	80		
A1.10	<b>External Lourves-supply:</b> 1200 x 1000mm aluminium lourvers complete with insect proof gauze The Lourvers shall be as tecnalco or equal and approved	No.	3		
A1.11	<b>Air Pre-filters:</b> 1600x 900mm x50mm aluminium washable air filters	No.	2		
A1.12	<b>Ductwork:</b> Galvanised mild steel duct work 0.8mm thick (SWG 22) complete with bends, hangers, supports, sleeves, flexible connectors, branch duct take offs, flanges, access doors, test holes, stiffeners, expanders, reducers, splitters, turning vanes and accessories all painted both internally and externally with suitable walt black paint	M <sup>2</sup>	480		

Item	Description	Unit	Qty	Rates (Kshs.) VAT INCL	Costs (Kshs.)
A1.13	<b>Balancing dampers:</b> Control dampers size 1400 x 400 mm with a galvanised steel frame of 80 mm deep and blades of 50 mm pitch complete with operating gear wheels. As “FRANCE AIR”.	No.	1		
A1.14	<b>Fire dampers</b> The fire dampers shall be of the “off set hinged single blade type” held on open position by a fusible link, set to release at a temperature of 85° C. the damper blade shall be weighed to ensure immediate closure on release of the link. The slink shall be held in position by means of rollers, complete with a micro-switch to shut off the fan. The fire damper to fit in a duct of 1250 x 500mm	No.	4		
A1.15	<b>Flexible connections:</b> Allow for associated builders work flexible connections shall be rubber bellows or neoprene and not canvas to isolate vibrations from the air conditioning unit or fans from the inter-connecting ductwork	pairs	6		
A1.16	Allow for Associated Electrical works which comprise Electrical connection of all electricity consuming items to a power outlet provided by others at a location within 10 metres from the equipment.	Item	1		
A1.16	Allo for Associated Conduits and cables works which comprise sensors connection to the panels and fans and to any other HVAC accesory or equipment.	Item	1		
A1.17	Contingency	Item	1		600,000
A1.18	<b>Total for Basement Ventilation c/f to price HVAC Main Price Summary page</b>				

**B Garbage room air treatment**

*The Contractor shall supply and Install the following:-*

<b>Item</b>	<b>Description</b>	<b>Unit</b>	<b>Qty</b>	<b>Rates (Kshs.) VAT INCL</b>	<b>Costs (Kshs.)</b>
B1.01	<b>Garbage Room Air treatment unit:</b> The unit to be complete with Ultra violete light and hepa air filters capable of purifying air with polutants and odours. The unit to have a max flow rate of 300cfm at top speed and 220cfm and 2nd speed. The air treatments to be as <b>SANUVOX S300 OZD</b> for garbage rooms up to 3000cf.	No.	2		
B1.02	<b>SUPPLY REGISTERS:</b> 250x400mm Aluminium Powder coated linear Diffusers with damper complete with adapter box to connect to 300mm flexible duct including 900mm Long Flexible duct and connectors	No.	4		
B1.03	<b>EXTRACT REGISTERS:</b> 250x400mm Aluminium Powder coated linear Diffusers with damper complete with adapter box to connect to 300mm flexible duct including 900mm Long Flexible duct and connectors	No.	4		
B1.04	<b>Ductwork:</b> Galvanised mild steel duct work 0.8mm thick (SWG 22) complete with bends, hangers, supports, sleeves, flexible connectors, branch duct take offs, flanges, access doors, test holes, stiffeners, expanders, reducers, splitters, turning vanes and accessories all painted both internally and externally with suitable walt black paint	M <sup>2</sup>	12		
<b>B1.05</b>	<b>Total for Garbage air Treatment c/f to price HVAC Main Price Summary page</b>				

## A AIR CONDITIONING

**Supply, deliver to site, install and commission the following as described below:**

*The Air conditioning Contractor shall supply labour and supply, deliver, install, fix, connect, test, label and commission the stabilizer works, clean, complete and working to every detail as described in the specification and by related specifications and on the drawings to the satisfaction of the Consulting Engineers. He will also be expected to attend site meetings / inspections to ascertain all necessary provisions are in place well in advance.*

C	Sever room AC				
Item	Description	Unit	QTY	Rates VAT INCL	Costs (Kshs.)
C1.01	<b>AIR COOLING UNIT</b> (24,000 BTU) Convertible Type Split System (wall mounted or console) air cooling unit of capacity 6.4kw as "Carrier" 38GL 024 and condensing unit as 38YL 024 or equal and approved. The unit shall be supplied complete with room thermometer, room thermostat and controls or remoted control device.the unit shall be such that if the power supply goes off, it will restart automatically after power is restored. Other models, which are acceptable, are as DAIKIN OR equal and approved	NO	3		
C1.02	Power protection AVS	LM	3		
C1.03	Testing and commissioning Allow for setting to work, balancing, testing and commissioning of the air-conditioning system and producing of as installed drawings.	Item	1		
C1.04	Contingency Sum	Item	1		30000
<b>C1.05</b>	<b>Total For Server Room AC c/f to price HVAC Main Price Summary page</b>				

**MAIN HVAC PRICE SUMMARY PAGE**

<b>ITEM</b>	<b>DESCRIPTION</b>	<b>AMOUNT ( KSHS)</b>
B1.01	Preliminaries and General Conditions	
B1.02	Basement Mechanical Ventilation	
B1.02	Garbage room Air treatment	
B1.02	Server room AC	
B1.03	Sum for Completion documents: Comprising workshop drawings, manufacturer's technical product catalogues, users manuals, maintenance manuals, as installed drawings, test certificates, etc. { NOTE: Penultimate Valuation will not be paid until these are fully availed & signed off by the engineer }	
B1.04	Sum for testing, system configuration & commissioning of the entire installations set complete with all accessories, interconnections, controls, BMS link & activation and the necessary programing.	
B1.05	Sum for training of client / user (At least 5 No. Users). The trained personnel must sign against the items they were trained on and this submitted to the engineer as part of completion document	
B1.06	Sum for 12 months comprehensive maintenance (Consumable, parts and labour) from date of practical completion.	
B1.07	<b>Total Cost for HVAC INCL of VAT to form of tender</b>	

Total amount in words: Kenya shillings \_\_\_\_\_

Name of firm / company \_\_\_\_\_

Official rubber-stamp \_\_\_\_\_

P.I.N. No.: \_\_\_\_\_ V.A.T. Reg. No. : \_\_\_\_\_

Signed by: \_\_\_\_\_ Date \_\_\_\_\_