

CLIENT: FREEDOM PARK  
 PROJECT: SUPPLY AND INSTALL NEW HVAC SYSTEM FOR GALAERY OF LEADERS AT  
 FREEDOM PARK  
 CONTRACT: MECHANICAL SERVICES - HVAC

Tender No: --

Item No.	Description	Unit	Amount
A	Additional P & G in accordance with the Standard and Detailed specification		
	AGREEMENT AND SCHEDULE OF BUILDING CONTRACT		
	Tenderers shall allow for all the clauses as referred to in the "Standard Main Contract Preliminaries" as contained in the Conditions of Contract(copy included in Part A attached here-to). The Tenderer shall, in addition, allow for whatever cost he may		
A1	<u>FIXED CHARGE ITEMS</u>		
A1.1	Contractual requirements	Item	
A2	<u>Establishment of Facilities on the site</u>		
A2.1	Site Establishment	Item	
A3	<u>Facilities for Engineer</u>		
A3.1	Offices, furnished rooms with telephone and name boards	Item	
A3.2	Carports for Resident Engineer	Item	
A4	<u>Facilities for Contractor</u>		
A4.1	Facilities for contractor	Item	
A4.2	Site Offices and storage sheds	Item	
A4.3	Allow for Storage of material on site	Item	
A4.4	Ablution and Latrine facilities for contractor	Item	
A4.5	Tools and Equipement and Plant on site	Item	
A4.6	Allow for Electrical Power during site Construction	Item	
A4.7	Allow for Water Suppliers during construction	Item	
A4.8	Allow for comminication and access related issues to site	Item	
A4.9	Allow for attendance to site meetings	Item	
A4.10	Other fixed charge Obligation	Item	
A4.11	Removal of Site Establishment	Item	
A4.12	Allow provisions for scaffolding in the installation of fan coil units	Item	
A4.13	Allow provisions for a crane for the installation of outdoor units	Rate Only per day	
	Preliminaries and Generals Carried Forward		

	Preliminaries and Generals Brought Forward		
	PROVISIONAL SUMS FOR:		
A5	Additional control testing ordered by the Engineer to be executed by the contractor.	Sum	
A6	Temporary Works	Item	
A7	Main Access to road from/to works	Item	
A8	Traffic Management	Item	
A10	COST OF SURVEY		
A10.1	Trigonometrical survey and pegging - Locate and record	Item	
A11	OCCUPATIONAL HEALTH AND SAFETY		
	Without limiting the generality of the provision of Contract, the Contractor's attention is drawn to the provision of the Construction Regulation, 2003 ( as amended), issued in terms of the Occupational Health and safety Act, 1993, in which it is specifically stated that the Employer shall prepare a documented health and safety specification for the works(refer to part 3:Scope of work - C3.4: Occupational Health and Safety Specification) and that the employer shall ensure that the Contractor has made provision for the cost of health and safety measures during the execution of works. The Contractor shall price opposite this item for compliance with the Act and the regulation and provisions of the aforementioned Health and Safety specification	Item	
A12	Supply programme with bar chart	Item	
A13	Compliance with heritage regulations	Item	
A14	Compliance with environment regulation	Item	
A15	Prepare and deliver 3 copies of Safety File including covid compliance	Item	
A16	Contractor to inform Department of Labour Before construction commences	Item	
A17	Allow for covid compliance, sanitizers and sanitizing stations on site.	Item	
A18	CONTRACT DRAWINGS		
A18.1	The drawing issued with the tender document do not comprise the complete set but serves as guide only for tendering purposes and for indicating the scope of the work to enable the tenderer to acquaint himself with the nature and extent of the works and the manner in which they are to be executed. Should any part of the drawing not be clearly intelligible to the tenderer he shall, before submitting his tender obtaining clarification in writing from the Engineer		
	Preliminaries and Generals Carried Forward		

	<b>Preliminaries and Generals Brought Forward</b>		
A18.2	Preparation and submission of shopfloor drawings for approval by the engineer	Item	
A18.3	Preparation of as built drawings 3 (A0 copies) and soft copy on flashdrive	Item	
A18.4	Submit to engineer specifications from supplier before procurement	Item	
A18.5	Supply and Install maintenance manuals after completion	Item	
A18.6	Supply and Install maintenance manuals after completion	Item	
A18.7	Issue Certificate of Compliance from a registered person by Sarracca	Item	
A18.8	Allow for testing and Commissioning of the system	item	
A18.9	Allow for testing and Commissioning of the entire system in the presence of engineer or engineer's representative and contractor	Item	
A18.10	Carry out onsite measurements for shopfloor drawings and installation	item	
A18.11	Compliance with labour management regulations	Item	
A18.12	Allow for Housekeeping during construction and provision of a safety officer	Item	
A18.13	Allow for site diary, site instruction book and all relevant documentation as per contract.	Item	
A19	<b>COLOUR CODED SAFETY CLOTHING</b>		
	The <b>contractor</b> shall provide all employees on site with brightly coloured, clearly visible protective clothing for use at all times on site. All personnel belonging to any one contractor shall wear the same colour protective clothing on site.	Item	
A20	<b>WORKING HOURS</b>		
	All work shall be carried out from 08.00 hours to 1700 hrs on Weekdays and from 08.00	<b>NOTE</b>	<b>NOTE</b>
	hours to 1500hrs on Saturday. Work outside of these times shall be undertaken only with		
	express written authorisation of the Agent. No work shall be scheduled for nor undertaken		
	on Sundays and Statutory public holiday.		
A21	<b>IDENTIFICATION CARDS/BADGES</b>		
	Provision shall be made for all employees on site to wear and clearly display identification	Item	
	cards or badges issued specifically for the project which shall prominently display a		
	passport size colour photograph of the employee, ID number, Name of Employer and		
	such information as shall be prescribed by the engineer. The contractor shall allow for the		
	cost of providing these identification cards/badges in his tender		
	<b>Preliminaries and Generals Carried Forward</b>		

	Preliminaries and Generals Brought Forward		
<b>A23</b>	<b>ELECTRICIANS ON SITE</b>		
	Contractor to have an Electrician to attend all electrical works for the contract perion	Item	
<b>A24</b>	<b>GUARANTEE</b>		
	Provide a 12 month Gaurantee period from the period of Final Handover of the project for the installation carried out. Installations should conform to SABS standards or/and British Standards whichever the Mechanical Engineer has approved. The Engineer shall require SABS certificates for all material supplied and installed and the Contractor shall liase with the manufacure and make sure such certificates are supplied to the engineer. The Certificates shall indicate the relevant tests done by the Manufacturer.	Item	
<b>A25</b>	<b>12 MONTH PREVENTATIVE MAINTANANCE</b>		
	The Contractor shall supply reconmeded maintainace control plans from the manufacture and shall carry out the maintainance for a period of 12 months starting from the day of final handover to the client.	Item	
<b>A</b>	<b>Total carried to A Summary Page</b>		

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Item No.	Description	Unit	Qty	Rate	Amount
B	HVAC SERVICE				
	MECHANICAL WORK				
	SUPPLEMENTARY PREAMBLES				
	Specifications, drawings, etc.				
	Tenderers are referred to the specification and drawings numbered accompanying these bills of quantities for the mechanical work, for the full descriptions of the following items which are to be read and priced in conjunction with the said specification and drawings				
	<b>Ductwork</b>				
	Descriptions of ducts shall be deemed to include stiffeners, jointing materials, sealants, couplers in the running length and access/inspection panels in accordance with the specification				
	<b>Dampers</b>				
	Descriptions of smoke and fire dampers shall be deemed to include fusible links, sleeves, frames, supports and access openings in ducts				
	<b>Air diffusion</b>				
	Descriptions of air terminals, grilles, louvres and the like shall be deemed to include necks, frames, supports and flexible connections				
	<b>Fans</b>				
	Descriptions of fan assemblies shall be deemed to include supports from the structure, flexible or other connections to ductwork, vibration isolation mountings and airtight inspection doors				
	<b>Sound attenuators</b>				
	Descriptions of sound attenuators shall be deemed to include flanged or flexible connections to ducts and supports from the structure				
	<b>Fan coil units, fan air terminals and fan heaters</b>				
	Descriptions of fan coil units, fan air terminals and fan heaters shall be deemed to include connection points for water, air and electrical supply, for air grilles, dust trays, condensate trays and vibration isolation mountings. Flexible ducts, flexible hose and connecting cables for connecting these units to each other or to water pipe, and electrical supply are separately measured				
	<b>BALANCE BROUGHT DOWN</b>				

	<b>BALANCE BROUGHT FORWARD</b>				
	<b>Major equipment</b>				
	Descriptions of major equipment such as VRV units, air handling units and the like shall be deemed to include connections to water, air and electrical supply and/or discharge points, supports, bearers, vibration insulation mountings, filters, insulation, inspection ladders and gangways, access doors and panels and painting etc. as specified				
	<b>Piping</b>				
	<b>Pipe diameters are nominal internal unless otherwise stated</b>				
	Where fittings have reducing ends or branches they are described as "reducing". In the case of pipes with diameters not exceeding 60mm only the largest end or branch diameter is given. Should the D&B wish to use other fittings and bushes or reducers he may do so on the understanding that no claim in this regard will be entertained. In the case of pipes with diameters exceeding 60mm all diameters are given and no claim for extra bushes, reducers, etc. will be entertained				
	<b>Fixing of pipes</b>				
	Unless otherwise stated, descriptions of pipes shall be deemed to include fixing to walls etc., casting in, building in or suspending not exceeding 1m below suspension level				
	<b>Insulation</b>				
	Descriptions of insulation shall be deemed to include priming the pipes with zinc chromate primer before the insulation is applied, painting the insulation when completed and applying vapour barrier where specified				
	<b>Air Conditioning Units</b>				
	Note: Supply And Install New Outdoor And Indoor Units. Heat Recovery Range Complete with Heat Pump Function, Mounting Ancillaries, Refrigerant Charge, Hard Wired, Condensate Piping and Interconnecting Power Cables Completely as Specified and Suspended from the Slab or Steel Structure. Supports to Include all Galvanised Hangers Brackets, Suitable Sized Threaded Rods, Raw bolts/Clamps to Carry the Weight of the Indoor and Outdoor Units as per Manufactures Specification. Suppliers: Mitsubishi, Dunham Bush, Carrier, York, Samsung, Trane, Daikin or equivalent.				
	Design, manufacture, works testing, supply and deliver to site, moving into position, erection, connecting up, site testing, witness testing, providing to insurance inspectors, demonstrating to the Employer, commissioning and maintenance of the complete mechanical systems and equipment as shown on the drawings.				
	<b>AIR CONDITIONING SYSTEM</b>				
	Design, manufacture, works testing, supply and deliver to site, moving into position, erection, connecting up, site testing, witness testing, proving to insurance inspectors, demonstrating to the Employer, commissioning and maintenance of the complete mechanical systems and equipment as shown on the drawings and datasheets.				
	<b>BALANCE BROUGHT DOWN</b>				

	<b>BALANCE BROUGHT FORWARD</b>				
	<u>Summary as follows:</u>				
	Inverter driven air conditioning Heat Pump unit complete with no voltage relay. Electrical connection from from local isolator with indoor fan coil units				
<b>B1</b>	<b>FAN COIL UNIT (INDOOR UNITS)</b>				
1	(AC 01) 28.0 kW Cooling, 31.5 kW heating Capacity fan coil unit 1200L/s c/w humidifiers	No.	4		
<b>B2</b>	<b>OUTDOOR UNITS</b>				
	Supply and Install Outdoor Units complete with all necessary fittings to make a complete installation				
1	112.5 kW Cooling, 113.5 Heating out door condensor unit using R410A (ODU1) located outside on a plinth c/w no voltage protection system	No.	1		
2	Unistrat for the Outdoor Units	No	2		
<b>B3</b>	<b>REFRIGERANT SUPPLY PIPE (R410A GAS)</b>				
1	Diameter 9.52mm copper	m	88		
2	Diameter 15mm copper	m	55		
3	Diameter 19.05mm copper pipe	m	88		
4	Diameter 22mm copper pipe	m	50		
5	Diameter 28mm copper pipe	m	55		
6	Diameter 35mm copper pipe	m	120		
7	Diameter 43mm copper pipe	m	135		
8	Y branch pipe for connection of outdoor units	Lot	2		
9	Y branch pipe for connection of indoor units	Lot	4		
<b>B4</b>	<b>REFRIGERANT PIPE INSULATION</b>				
1	Diameter 9.52mm copper	m	88		
2	Diameter 15mm copper	m	55		
3	Diameter 19mm copper pipe	m	88		
4	Diameter 22mm copper pipe	m	50		
5	Diameter 28mm copper pipe	m	55		
6	Diameter 35mm copper pipe	m	120		
7	Diameter 43mm copper pipe	m	135		
8	25mm PVC pipe for drainage	m	90		
9	Supply and Install HVAC Drain Pumps	No.	4		
	<b>BALANCE BROUGHT DOWN</b>				-

	BALANCE BROUGHT FORWARD				-
B5	AIR CONDITIONING DUCTS AND ACCESSORIES INSULATED WITH FIBRE GLASS				
	Allow for ductwork as shown in the drawings				
	<u>Supply Air Ducts</u>				
1	150mm Dia GMS duct	m	30		
2	200mm Dia GMS duct	m	30		
3	450*450 GMS duct	m	80		
4	300*300 GMS duct	m	20		
5	250*250 GMS duct	m	20		
6	1200*600 GMS duct	m	8		
7	Fresh Air Plenum to suit the 28kW FCU and Fresh Air Supply	No	4		
	<u>Flexible Round Duct</u>				
7	ø350mm Flexible Round duct.	m	10		
8	ø200mm Flexible Round duct.	m	10		
	<u>Accessories (Insulated)</u>				
	<u>DUCT REDUCERS</u>				
9	From 450x450mm to 300x300mm	no	2		
10	From 300x300mm to 250x250mm	no	2		
	<u>FAN DUCT CONNECTORS</u>				
11	ø710mm x 1,5 m long duct	No.	2		
	<u>T-PIECES</u>				
12	450 x 450mm, 200dia., 450 x 450mm Duct	No.	4		
13	300 x 300mm, 150dia., 300 x 300mm Duct	No.	4		
	<u>ELBOWS</u>				
14	150mm Dia GMS duct	No.	4		
15	200mm Dia GMS duct	No.	4		
16	450*450 GMS duct	No.	2		
17	300*300 GMS duct	No.	2		
18	1200*600 GMS duct	No.	4		
B6	AIR TERMINALS				
1	Spigot of diameter 250mm	No.	8		
2	Spigot of diameter 200mm	No.	8		
3	Spigot of diameter 150mm	No.	8		
	BALANCE BROUGHT DOWN				-



	<b>BALANCE BROUGHT FORWARD</b>				-
	<u>Supply and install diffuser including spigots</u>				
4	Ducted Linear Constant Air Volume Air Grille 1200x600 at 1000L/s. to be	No.	4		
<b>B7</b>	<b>PRESSURE CONTROL DAMPERS &amp; ACCESSORIES</b>				
1	Pressure sensor : 140 Pa for Fresh Air supply duct	No.	2		
	Damper c/w rotary actuator : 450 x 450mm for Fresh Air supply duct				
2	Pressure sensor : 140 Pa for Fresh Air supply duct	No.	2		
	Damper c/w rotary actuator : 300 x 300mm for Fresh Air supply duct				
3	Pressure sensor : 140 Pa for Fresh Air supply duct	No.	2		
	Damper c/w rotary actuator : 250 x 250mm for Fresh Air supply duct				
<b>B8</b>	<b>Note: Supply and Install Fresh Air Fan System as Specified in the Drawing, Suspended from Slab or Steel Structure. Supports to Include all Galvanised Hanger Brackets, 10 mm Threaded Rod, Raw bolts/Clamps, etc.</b>				
	Fans, Fresh Air System				
1	Fan, Inline, Ø710, Complete With Sound Attenuator Rated NC 600 L/S and all necessary fittings and accessories for a complete installation. Fan shall be vandal proof and mounted on the roof. The set shall come c/w 2 sound attenuators	No	2		
2	Supply and install sound attenuators to match the fresh air fan	No	4		
3	Weather Louvre, 1200x800, Natural Anodised Aluminium, with Vermin Proof Mesh	No	2		
<b>B9</b>	<b>CONTROLLERS</b>				
1	Smart touch controller: All controllers shall be wired and shall be digital. The controller shall be able to switch on the AC system together with fresh air fans for the four FCUs.	No	1		
<b>B10</b>	<b>FIRE DAMPERS</b>				
1	450 x 450 mm c/w frame and made of steel with a fuseable link	No	2		
2	300 x 300 mm c/w frame and made of steel with a fuseable link	No	2		
3	250 x 250 mm c/w frame and made of steel with a fuseable link	No	2		
<b>B11</b>	<b>ELECTRICAL WORK</b>				
1	Electrical installation & wiring etc, complete for indoor and outdoor air conditioning units including local starter/isolator switch Including all trunking and wiring channels also for the mechanical equipment	Item	1		
2	Supply and Install 3 phase isolator c/w cables for the out door unit	No.	1		
3	Supply and install electric cables and conduits for wired controllers	Sum	4		
4	Supply and install steel conduits 32mm	m	40		
	<b>BALANCE BROUGHT DOWN</b>				-

	<b>BALANCE BROUGHT FORWARD</b>				-
4	Supply and Install electric cables for all the HVAC indoor and out door units	Sum	4		
5	Upgrading of the HVAC distribution board to match the new system	Item	1		
<b>B12</b>	<b>CABLE TRAY AND SUPPORTS</b>				
1	Supply and Install Cable tray, approximately sized to support refrigerant pipes, inter connecting power cables and control cables, suspended from slab or steel structure. Supporters to include all galvanised hanger brackets, 10mm threaded rod, raw bolts/clamps, etc.	m	100		
<b>B13</b>	<b>BUILDERS WORK</b>				
1	Allow for sealing off air gaps in the Gallery Hall ( Allow for one hundred & Fifty Thousa	PSum	1	150 000.00	150 000.00
2	Allow for making good of walls and painting in affected areas to suite the internal	PSum	1	85 000.00	85 000.00
3	Supply and install 2400 x 2400 x 300(h) Plinth for out door unit	Sum	1		
4	Supply and install 150x150 Steel trunking for Out door Unit to inside of the building. Trunking to be installed passing a concrete walkway and painted to match the existing steps	m	15		
5	Supply and install 3000 x 3000 x 1500(H) Steel cage for outdoor unit c/w with all necessary fittings to make a complete installation.	Item	1		
<b>B14</b>	<b>CONTROLS</b>				
1	Allow for the control system intergrating the HVAC system control system including the fresh air fans.	Item	1		
<b>B15</b>	<b>PROJECT ENGINEERING AND QUALITY MANAGEMENT</b>				
1	Testing, balancing, commissioning and handover of air conditioning units and fans including compilation of submitted to the Engineer for approval.				
2	Operation and Maintenance Instruction Manuals	set	4		
3	User Training	Item	1		
4	Sets of "as built" drawings "including 1 cd"	No.	6		
4	Production of shopfloor drawings and submission to engineer for approval showing sections	Item	1		
5	12 Months free maintenance	item	1		
6	Issuing of COC by a registered personal	Item	1		
7	Provision of a maintenance control plan	Item	1		
<b>B16</b>	<b>TEST &amp; COMMISSION</b>				
1	Test and Commission the Entire Air conditioning system	Item	1		
2	Ditto but in the presence of and to the entire satisfaction of the Consulting Engineer.	Item	1		
<b>B</b>	<b>TOTAL CARRIED FORWARD TO SUMMARY PAGE</b>				<b>R</b>

CLIENT: FREEDOM PARK  
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Item No.	Description	AMOUNT
	<u>FINAL SUMMARY PAGE</u>	
	<u>PRELIMINARIES AND GENERAL CONDITIONS OF THE CONTRACT</u>	
A	TOTAL BROUGHT FORWARD FROM Ps and Gs	-
	<u>MAIN BUILDING MECHANICAL SERVICES INSTALLATION</u>	
B	TOTAL BROUGHT FORWARD FROM HVAC	-
	SUB TOTAL	-
	ADD 10 % CONTIGENCIES	-
	SUB TOTAL (EXCL VAT)	-
	ADD 15% VAT	-
	TOTAL TENDER VALUE OFFERED	-