

**CT2207T056**

**QUOTATION FOR REPLACEMENT OF AIR HANDLING UNITS (AHUs) AT PRODUCTION BLOCK & ADMIN IN SICC 1**

**1. SCOPE OF WORKS**

- 1.1 SATS Limited is calling quotation for the replacement of 12 units of Air Handling Units (AHUs).
- 1.2 The Contractor are required to obtain at least L1 or above under ME1: Air-conditioning, Refrigeration & Ventilation Works in BCA work head.
- 1.3 Working Hours

The replacement works can either be carried out during normal or after office hour including Sunday and Public Holiday as shown below. SATS Limited reserves the right to revise the schedule as and when required.

<u>Normal office hours</u>	
Monday-Saturday	0830-1800
<u>After office hours</u>	
Friday / Saturday	1800-2359
Sunday / Public Holidays	0000-2359

The Bidders shall be responsible for procuring all necessary labor and staff for the timely completion of the work and shall bear all costs and expenses associated with employing labor and staff for this project.

All works that affect the building operation shall be carried out after office hours and agreed by SATS Limited before carrying out. Replacement of AHU with A and B shall be staggered to prevent interruption of supply to respective areas. These hours shall include both “normal hours” and “after office hours”. If the hours fall on a Sunday/PH, the bidder shall also be responsible for additional cost if any.

No claim for any cost or expenses incurred in connection with overtime work will be entertained or allowed.

**2. REQUIREMENT SPECIFICATIONS**

The works to be performed by the Contractor under this Contract include the Replacement of AHUs in SATS Inflight Catering Centre 1 located at 20 Airport Blvd, Singapore 819659. The specifications of the new AHU should be the same or equivalent to the existing technical specifications as indicated in **Appendix A** and **Appendix D** The replacement will include any modification required to the ductwork or its accessories as required by type of AHUs selected.

S/N	DESCRIPTION
2.1	<b><u>Replacement of AHUs</u></b>
2. 1.1	The Contractor shall provide labour, tools, materials and equipment necessary to dismantle and dispose offsite the existing AHU and associated ductworks, pipe works and fitting up to the valves (supply and return). The dismantling works shall include but not limited to the following: - Ductworks and non-return damper (NRD)

	<ul style="list-style-type: none"><li>- Pipework and insulation</li><li>- Valves</li><li>- Gauges, strainers, and all other accessories</li><li>- Control panel</li></ul> <p>Any other items/ materials deem unnecessary for the new AHU</p>
2.1.2	<p>The Contractor shall design, supply, install, test and commission new AHU with equivalent capacity for AHUs as stated in Appendix D. The performance of the proposed AHUs shall comply to all relevant code of practices but not limit to the following:</p> <ul style="list-style-type: none"><li>- SS553:2016</li><li>- SS554:2016</li></ul> <p>Design valves to follow whichever is more stringent.</p>
2.1.3	<p>The Contractor shall modify or replace existing pipework to suit the new AHU coupled with the following new accessories:</p> <ul style="list-style-type: none"><li>- Modulating and balancing valves</li><li>- Actuator</li><li>- Strainers</li><li>- Pressure gauges</li><li>- Thermometers Sensors and any other sensors found onsite</li><li>- Flow Meter for chilled-water and condenser water loop</li><li>- Any other necessary accessories to complete the new AHU system</li><li>- Refer to appendix E for more information</li></ul> <p>The Contractor shall paint all the new pipework with the designated colour.</p>
2.1.4	<p>The Contractor shall modify the existing plinths to suit the new AHU.</p>
2.1.5	<p>The Contractor shall carry out the necessary air and water balancing of the newly installed equipment complying to SS 553:2016 including the system water balancing after completion of new AHU.</p> <p>The Contractor shall carry out testing and commissioning upon the completion of each AHU before proceeding to the replacement of the next AHU.</p> <p>Please refer to appendix B for more information of balancing, testing and commissioning.</p>
2.1.6	<p>The Contractor shall conduct pre and post-retrofit audit for AHU for a minimum of two (2) days each with trend logging at 1 minute interval. The parameters to be trend-logged are as follows:</p> <ul style="list-style-type: none"><li>- Chilled water supply temperature (°C)</li><li>- Chilled water return temperature (°C)</li><li>- Chilled water flow rate for AHU (L/s)</li><li>- AHU fan motor power (kW)</li><li>- Supply or off-coil air temperature (°C) and RH (%)</li><li>- Return or on-coil air temperature (°C) and RH (%)</li></ul> <p>The following parameters shall be spot-measured:</p> <ul style="list-style-type: none"><li>- Total fan static pressure (Pa)</li><li>- Fresh air temperature (°C) and RH (%)</li><li>- Supply air flow rate (L/s)</li><li>- Return air flow rate (L/s)</li><li>- Indoor CO2 level (ppm)</li></ul> <p>The Contractor shall submit their methodology of the audit during the tender submission.</p>

2.1.7	<p>The Contractor shall supply and install new control panel to accommodate the AHU come with the following selector switches:</p> <ul style="list-style-type: none"><li>- For selection between VSD and manual starter</li><li>- For selection between BMS and manual mode completed with on/off button</li></ul> <p>The following BMS control and monitoring points shall be includes:</p> <ul style="list-style-type: none"><li>- Supply and Return Air Temp and setpoint</li><li>- RA Temp setpoint</li><li>- Filter Alarm</li><li>- Off Coil Temp</li><li>- Smoke Detector</li><li>- Digital Power Meter</li><li>- Valve Command</li><li>- Valve Override – Valve feedback</li><li>- Manual Start/ Manual Stop/ BAS Mode</li><li>- On/ Off/ Trip Status</li><li>- VSD Control</li></ul> <p>The Contractor shall be responsible to work with the current BMS contractor and and FAS contractor to carry out the necessary interfacing works including full testing and commissioning of the new installation. Please below for their respective contact information.</p> <p>BMS Contractor: Siemens Contact person: Mr Lee Chenghwan    Email: <a href="mailto:chengchwan.lee@siemens.com">chengchwan.lee@siemens.com</a></p> <p>FAS Contractor: Johnson Control Contact person: Mr Chiew lim Cheah    Email: <a href="mailto:chiew.lim.cheah@jci.com">chiew.lim.cheah@jci.com</a></p>
	Replacement of 10 nos. AHUs located at Production Block
2.1.8	<p>The Contractor shall provide labour, tools, materials and equipment to replace AHU 4-2A serving premier kitchen as follows:</p> <ul style="list-style-type: none"><li>- To replace AHU including modification/ replacement of the structure frame if necessary.</li><li>- To replace ductwork until the point mark with “X” onsite including NRD, insulation and all necessary modification to fit new AHU.</li><li>- To clean and paint all existing ductwork within the AHU room</li><li>- To replace pipework up to manual valve including all the necessary accessories as mentioned in item 1.3</li><li>- To replace the jacketing of the existing drainpipe including painting</li><li>- To modify drainpipe and create additional cleaning eye for maintenance</li><li>- To replace control panel as mentioned in item 1.7</li><li>- To replace VSD with ABB or equivalent</li></ul>
2.1.9	<p>The Contractor shall provide labour, tools, materials and equipment to replace AHU 4-2B serving premier kitchen as follows:</p> <ul style="list-style-type: none"><li>- To replace AHU including modification/ replacement of the structure frame if necessary.</li><li>- To replace ductwork until the point mark with “X” onsite including NRD, insulation and all necessary modification to fit new AHU.</li><li>- To clean and paint all existing ductwork within the AHU room</li><li>- To replace pipework up to manual valve including all the necessary accessories as mentioned in item 1.3</li><li>- To replace the jacketing of the existing drainpipe including painting</li><li>- To replace control panel as mentioned in item 1.7</li></ul>

2.1.10	<p>The Contractor shall provide labour, tools, materials and equipment to replace AHU 4-3A serving Japanese kitchen as follows:</p> <ul style="list-style-type: none"> <li>- To replace AHU including modification/ replacement of the structure frame</li> <li>- To replace ductwork until the point mark with "X" including NRD, insulation and all necessary modification to fit new AHU.</li> <li>- To clean and paint all existing ductwork within the AHU room</li> <li>- To replace manual valve</li> <li>- To replace pipework up to manual valve including all the necessary accessories as mentioned in item 1.3</li> <li>- To replace the jacketing of the existing drainpipe including painting</li> <li>- To modify and drainpipe and create additional cleaning eye for maintenance</li> <li>- To replace control panel as mentioned in item 1.7</li> </ul>
2.1.11	<p>The Contractor shall provide labour, tools, materials and equipment to replace AHU 4-3B serving Japanese kitchen as follows:</p> <ul style="list-style-type: none"> <li>- To replace AHU including modification/ replacement of the structure frame</li> <li>- To replace ductwork until the point mark with "X" onsite including NRD, insulation and all necessary modification to fit new AHU.</li> <li>- To clean and paint all existing ductwork within the AHU room</li> <li>- To replace manual valve</li> <li>- To replace pipework up to manual valve including all the necessary accessories as mentioned in item 1.3</li> <li>- To replace the jacketing of the existing drainpipe including painting</li> <li>- To replace control panel as mentioned in item 1.7</li> <li>- To replace VSD with ABB or equivalent</li> </ul>
2.1.12	<p>The Contractor shall provide labour, tools, materials and equipment to supply and reinstate the fresh air opening for AHU 4-3A &amp; AHU 4-3B</p>
2.1.13	<p>The Contractor shall provide labour, tools, materials and equipment to replace AHU 4-6A serving Tray Assembly as follows:</p> <ul style="list-style-type: none"> <li>- To replace AHU including modification/ replacement of the structure frame</li> <li>- To replace ductwork until the point mark with "X" onsite including NRD, insulation and all necessary modification to fit new AHU.</li> <li>- To clean and paint all existing ductwork within the AHU room</li> <li>- To replace pipework up to manual valve including all the necessary accessories as mentioned in item 1.3</li> <li>- To replace control panel as mentioned in item 1.7</li> <li>- To replace VSD with ABB or equivalent</li> </ul>
2.1.14	<p>The Contractor shall provide labour, tools, materials and equipment to replace AHU 4-6B serving Tray Assembly as follows:</p> <ul style="list-style-type: none"> <li>- To replace AHU including modification/ replacement of the structure frame</li> <li>- To replace ductwork until the point mark with "X" onsite including NRD, insulation and all necessary modification to fit new AHU.</li> <li>- To clean and paint all existing ductwork within the AHU room</li> <li>- To replace pipework up to manual valve including all the necessary accessories as mentioned in item 1.3</li> <li>- To replace control panel as mentioned in item 1.7</li> <li>- To replace VSD with ABB or equivalent</li> </ul>
2.1.15	<p>The Contractor shall provide labour, tools, materials and equipment to replace AHU 4-7A serving Tray Assembly as follows:</p> <ul style="list-style-type: none"> <li>- To replace AHU including modification/ replacement of the structure frame</li> </ul>

	<ul style="list-style-type: none"> <li>- To replace ductwork until the point mark with "X" onsite including NRD, insulation and all necessary modification to fit new AHU.</li> <li>- To clean and paint all existing ductwork within the AHU room</li> <li>- To replace manual valve</li> <li>- To replace pipework up to manual valve including all the necessary accessories as mentioned in item 1.3</li> <li>- To replace control panel as mentioned in item 1.7</li> <li>- To replace VSD with ABB or equivalent</li> </ul>
2.1.16	<p>The Contractor shall provide labour, tools, materials and equipment to replace AHU 4-7B serving Tray Assembly as follows:</p> <ul style="list-style-type: none"> <li>- To replace AHU including modification/ replacement of the structure frame</li> <li>- To replace ductwork until the point mark with "X" onsite including NRD, insulation and all necessary modification to fit new AHU.</li> <li>- To clean and paint all existing ductwork within the AHU room</li> <li>- To replace manual valve</li> <li>- To replace pipework up to manual valve including all the necessary accessories as mentioned in item 1.3</li> <li>- To replace control panel as mentioned in item 1.7</li> <li>- To replace VSD with ABB or equivalent</li> </ul>
2.1.17	<p>The Contractor shall provide labour, tools, materials and equipment to replace AHU 4-8A serving Tray Assembly as follows:</p> <ul style="list-style-type: none"> <li>- To replace AHU including modification/ replacement of the structure frame</li> <li>- To replace ductwork until the point mark with "X" onsite including NRD, insulation and all necessary modification to fit new AHU.</li> <li>- To clean and paint all existing ductwork within the AHU room</li> <li>- To replace pipework up to manual valve including all the necessary accessories as mentioned in item 1.3</li> <li>- To replace control panel as mentioned in item 1.7</li> </ul>
2.1.18	<p>The Contractor shall provide labour, tools, materials and equipment to replace AHU 4-8B serving Tray Assembly as follows:</p> <ul style="list-style-type: none"> <li>- To replace AHU including modification/ replacement of the structure frame</li> <li>- To replace ductwork until the point mark with "X" onsite including NRD, insulation and all necessary modification to fit new AHU.</li> <li>- To clean and paint all existing ductwork within the AHU room</li> <li>- To replace pipework up to manual valve including all the necessary accessories as mentioned in item 1.3</li> <li>- To replace control panel as mentioned in item 1.7</li> </ul>
	Replacement of 2 nos. AHUs located at Admin Block
2.1.19	<p>The Contractor shall provide labour, tools, materials and equipment to replace AHU S2-2 serving Canteen as follows:</p> <ul style="list-style-type: none"> <li>- To replace AHU including modification/ replacement of the structure frame</li> <li>- To replace ductwork until the point mark with "X" onsite including NRD, insulation and all necessary modification to fit new AHU.</li> <li>- To clean and paint all existing ductwork within the AHU room</li> <li>- To replace manual valve</li> <li>- To replace pipework up to manual valve including all the necessary accessories as mentioned in item 1.3</li> <li>- To replace control panel as mentioned in item 1.7</li> <li>- To replace VSD with ABB or equivalent</li> </ul>

2.1.20	<p>The Contractor shall provide labour, tools, materials and equipment to replace AHU S4-4 serving Training Kitchen as follows:</p> <ul style="list-style-type: none"><li>- To replace AHU including modification/ replacement of the structure frame</li><li>- To replace ductwork until the point mark with "X" onsite including NRD, insulation and all necessary modification to fit new AHU.</li><li>- To clean and paint all existing ductwork within the AHU room</li><li>- To replace 2 nos. of manual valve</li><li>- To replace pipework up to manual valve including all the necessary accessories as mentioned in item 1.3</li><li>- To replace and paint the drainpipe including insulation, jacketing, all required accessories</li><li>- To replace control panel as mentioned in item 1.7</li><li>- To replace VSD with ABB or equivalent</li></ul>
	Optional
2.1.21	The Contractor shall design, supply and install pre-AHU including control panel for AHU 4-2A and AHU 4-2B.
2.1.22	The Contractor shall design, supply and install pre-AHU including control panel for AHU 4-3A and AHU 4-2B.
2.1.23	The Contractor shall supply and install UV disinfection including all necessary work such as additional power supply.
2.1.24	The Contractor shall supply and install sensor automatic control device to regulate outdoor air flow to maintain concentration of CO2 including all necessary works.
2.1.25	The Contractor shall supply and install new BTU meter in accordance to BCA Green Mark standard.
2.2	<b><u>General Requirements</u></b>
2.2.1	<p>Works carried out should comply and be in accordance with the Rules &amp; Regulation set by the SATS Limited.</p> <p><u>Prior to the commencement of work:</u></p> <p>Awarded vendor to provide site supervision &amp; coordination and project documents including but not limited to pre-con site survey report, site measurement and verification, design submission (includes but not limited to technical data of the proposed equipment selection etc.) with supporting documents and computations, Method of statement (MOS), Risk Assessment (RA) with impact-aspect, master project schedule and material submission.</p> <p>Awarded vendor to provide equipment information for approval.</p> <p><u>During the execution of work:</u></p> <p>Awarded vendor to provide site safety supervision.</p> <p>Awarded vendor to ensure that existing equipment to be dismantled and removed off site through proper and safe procedure including providing barricades, hoarding, signage, and floor protection</p>

	<p>Awarded vendor to ensure that all area of work is made good upon the completion of replacement works which includes but not limited to building works and relocation of other services to facilitate the replacement works. (E.g., wall painting &amp; hacking, walls and water proofing).</p> <p><u>Upon completion of work:</u></p> <p>Awarded vendor to perform Testing and Commissioning based on SATS Limited requirements and applicable guidelines from local and international standards governing HVAC systems.</p> <p>Awarded vendor to provide <b>one (1)</b> soft copy and <b>two (2)</b> hard copies of:</p> <ul style="list-style-type: none"><li>• Operation and Maintenance (O&amp;M) Manual</li><li>• Product/parts catalogue</li><li>• Equipment technical data / selection and technical drawing</li><li>• Equipment schedule indicating information such as but not limited to: Offered capacities, model, serial no.</li></ul> <p>Full testing and commissioning (T&amp;C) report.</p>
2.2.2	<p><u>Housekeeping</u></p> <p>All work site, access routes and storage areas (if any) shall be as clean as practicable on daily basis, and as and when directed by SATS Limited.</p> <p><b>Note:</b> Adequate Personal Protection Equipment (PPE) shall be worn by all personnel involved for site work.</p>
2.2.3	<p><u>Reinstatement works of affected area upon Completion</u></p> <p>Bidder is to make good all works which are damaged and/or disturbed by the installation works.</p> <p>All items shall be cleaned immediately upon completion.</p> <p>Liability for any damages caused during project period shall be included. Any services and/or utilities affected during the construction period shall be reinstated immediately.</p> <p><b>Note:</b> Making good of affected walls, doors, frames etc. including fire doors, fire stops and painting, along delivery route(s) shall be carried out.</p> <p>All affected walls, doors, floors, areas etc, are to be made good in accordance with existing materials, finishes and dimensions to SATS Limited's acceptance.</p> <p>All penetrations through all walls shall be sealed up promptly with approved types of fire-rated damper and fire-stop materials to SATS Limited's acceptance and local code of practice for fire precaution (Fire Code).</p>
2.2.4	<p><u>Defect Liability Period / Warranty</u></p> <p>WARRANTY – A minimum of <b>12 months</b> from date of successful testing, commissioning, and handing over by the awarded Bidder.</p> <p>(Preventive Maintenance will be carried out by SATS in-house maintenance team.)</p>

**3. SCHEDULE OF TECHNICAL DATA**

The contractor shall complete the following schedule of technical data and submit and supplementary information which may be considered necessary to convey a complete description of the equipment offered.

The schedule is meant to be the minimum and standard that will be accepted for the execution of works. The contractor is reminded that notwithstanding whatever is submitted in this schedule, all equipment installed must comply with the requirements specified in the scope of works.

**3.1 AHU Details**

<b>AHU No.</b>	<b>AHU 4-2A &amp; AHU 4-2B</b>	<b>AHU 4-3A &amp; AHU 4-3B</b>	<b>AHU 4-6A &amp; AHU 4-6B</b>	<b>AHU 4-7A &amp; AHU 4-7B</b>
<b>Description</b>				
Manufacturer				
Model				
Total Air Volume (CMH)				
<b>Main Coil</b>				
Total Cooling Capacity (kW)				
Sensible Cooling Capacity (kW)				
On-Coil Air Conditions (°C DB / °C WB)				
Off-Coil Air Conditions (°C DB / °C WB)				
CHW Inlet Temp (°C)				
CHW Outlet Temp (°C)				
CHW Flow Rate (L/s)				
Fins per Inch FPI<10				
Quantity of Rows				
Max Water Pressure Drop (kPa<39)				
Coil Face Velocity (m/s)				
Max Air Pressure Drop (Pa)				

<b>Fan</b>				
Total Fan Static Pressure (Pa)				
Fan Type				
Fan Efficiency (%)				
<b>Motor</b>				
Manufacturer				
V/Phase/Hz				
Enclosure Type - TEFC				
Enclosure Class – IP54				
Insulation Class - F				
Min Motor Efficiency Class – IE3				
Rate Power Consumption (kW)				
Drive – VSD				
<b>Air Filter</b>				
Manufacturer				
Primary – Min MERV 6				
Primary – Min MERV 14				
<b>Performance</b>				
Efficiency (kW/RT ≤ 0.150)				
<b>Variable Speed Drive</b>				
Manufacturer				
Model				
Country of Manufacturer				
Enclosure – IP55				

Harmonic Filter – Built-in				
<b>AHU No.</b>	<b>AHU 4-8A &amp; AHU 4-8B</b>	<b>AHU S2-2</b>	<b>AHU 24-4</b>	
<b>Description</b>				
Manufacturer				
Model				
Total Air Volume (CMH)				
<b>Main Coil</b>				
Total Cooling Capacity (kW)				
Sensible Cooling Capacity (kW)				
On-Coil Air Conditions (°C DB / °C WB)				
Off-Coil Air Conditions (°C DB / °C WB)				
CHW Inlet Temp (°C)				
CHW Outlet Temp (°C)				
CHW Flow Rate (L/s)				
Fins per Inch FPI<10				
Quantity of Rows				
Max Water Pressure Drop (kPa<39)				
Coil Face Velocity (m/s)				
Max Air Pressure Drop (Pa)				
<b>Fan</b>				
Total Fan Static Pressure (Pa)				
Fan Type				

Fan Efficiency (%)				
<b>Motor</b>				
Manufacturer				
V/Phase/Hz				
Enclosure Type – TEFC				
Enclosure Class – IP54				
Insulation Class - F				
Motor Speed (rpm)				
Min Motor Efficiency Class – IE3				
Rate Power Consumption (kW)				
Drive – VSD				
<b>Air Filter</b>				
Manufacturer				
Primary – Min MERV 6				
Primary – Min MERV 14				
<b>Performance</b>				
Efficiency (kW/RT ≤ 0.150)				
<b>Variable Speed Drive</b>				
Manufacturer				
Model				
Country of Manufacturer				
Enclosure – IP55				
Harmonic Filter – Built-in				

Pipework

<b>Chilled Water Pipe and Fittings</b>		
Manufacturer	To offer	
Country of Manufacture	To indicate	
Material	Heavy Gauge Galvanised steel	
Standard Compliance	To indicate	
<b>Condensate Pipe and Fittings</b>		
Manufacturer	To offer	
Country of Manufacture	To indicate	
Material	PVC	
Standard Compliance	To indicate	
<b>Gate Valves, Ball Valves &amp; Check Valves</b>		
Manufacturer	Toyo or equivalent	
Country of Manufacture	To indicate	
Material	To indicate	
Standard Compliance	To indicate	
<b>Motorized Valve</b>		
Manufacturer	To indicate	
Country of Manufacture	To indicate	
Material	To indicate	
Standard Compliance	To indicate	
<b>Motorized Damper</b>		
Manufacturer	To indicate	
Country of Manufacture	To indicate	
Material	To indicate	
Standard Compliance	To indicate	
<b>Strainers</b>		
Manufacturer	Toyo or equivalent	

Country of Manufacture	To indicate	
Material	To indicate	
Standard Compliance	To indicate	
<b>Pipework Insulation</b>		
Manufacturer	Armaflex or equivalent	
Country of Manufacture	To indicate	
Material	Close cell polyurethane	
Standard Compliance	To indicate	

3.2 Ductwork

<b>Rectangular Ductwork</b>		
Manufacturer	To offer	
Country of Manufacture	To indicate	
Material	G.I. Sheet Metal	
Standard Compliance	To indicate	
<b>Ductwork External Insulation</b>		
Manufacturer	To offer	
Country of Manufacture	To indicate	
Material	Fibreglass	
Standard Compliance	To indicate	
<b>Non-Return Damper</b>		
Manufacturer	To offer	
Country of Manufacture	To indicate	
Material	To indicate	
Standard Compliance	To indicate	

**4. SCHEDULE OF RATES**

The Contractor is required to price the various items in the Schedule of Rates. Failure to do so may render his/ her Quotation invalid.

Rates should include conveyance, transport, delivery, unloading, storing and all labour, setting, fitting and fixing in position, all cutting and packing and establishment charges.

<b>S/ No.</b>	<b>Item Description</b>	<b>Unit</b>	<b>Rate (S\$)</b>
4.1	MERV 13 Filter Contractor to specify size: _____	Per pc	
4.2	MERV 6 Filter Contractor to specify size: _____	Per pc	
4.3	Chilled water pipe (with insulation and jacketing) Contractor to specify size: up to _____	Per m	
4.4	Chilled water pipe (with insulation and jacketing) Contractor to specify size: up to _____	Per m	
4.5	Chilled water pipe (with insulation and jacketing) Contractor to specify size: up to _____	Per m	
4.6	Chilled water pipe (with insulation and jacketing) Contractor to specify size: up to _____	Per m	
4.7	Drainage pipe (with insulation) Contractor to specify size: up to _____	Per m	
4.8	Hot-Tap with valve & accessories	Per no.	
4.9	Freeze-cut c/w valve & accessories	Per no.	
4.10	1 x 1 mm <sup>2</sup> PVC insulated cable inclusive steel trunking or conduit		
4.11	1 x 1.5 mm <sup>2</sup> PVC insulated cable inclusive steel trunking or conduit		
4.12	1 x 2.5 mm <sup>2</sup> PVC insulated cable inclusive steel trunking or conduit		
4.13	1 x 6 mm <sup>2</sup> PVC insulated cable inclusive steel trunking or conduit		
4.14	1 x 10 mm <sup>2</sup> PVC insulated cable inclusive steel trunking or conduit		
4.15	To supply and install actuator including all necessary works Contractor to specify size: up to _____		

S/ No.	Item Description	Unit	Rate (\$)
4.16	To supply 1 no. of skilled labour on weekends and public holiday	Per Hour	
4.17	To supply 1 no. of skilled labour on weekends and public holiday	Per Hour.	
4.18	Contractor to specify:		

4.18	Valves and Accessories with insulation (unit rate per pc)							
Size (mm) Contractor to specify	Butterfly	Gate	Glode	Balancing	Check	Motorised Butterfly	Motorised Flow Control	Strainer

4.19	Duct works (unit rate in m2)					
Sheet Metal Duct Work	300 or less	301 to 600	601 to 800	801 to 1000	1001 or more	
Rectangular	Internally insulated					
	Externally insulated					
	Bare with painting					
Round Duct	Internally insulated					
	Externally insulated					
	Bare with painting					
Dampers	Volume control damper					
	Motorized damper with micro switch					
	Non-return damper					

**5. PROPOSAL FEE**

- 5.1 The Contractor shall include all necessary equipment such as crane, lifting equipment for the AHU replacement works. This includes all necessary certified and trained personnel required to carry out the job as per Ministry of Manpower (MOM) and SATS Limited safety requirement.
- 5.2 In the event of any variation for any addition or omission, the Contractor payment shall be added or deducted according to the unit item priced in Quotation Price Breakdown.
- 5.3 SATS Limited reserve the rights to award the project in parts or phases. (Example, award half the quantity stipulated)
- 5.4 The Bid Price submitted shall be valid for at least 6 months. SATS Limited reserved the right to make an additional purchase according to the submitted price per unit within the 6 months at no minimum quantity.

**6. PROJECT SCHEDULE**

- 6.1 The deliverables shall be supplied, delivered and installed to the approved site by SATS Limited within 4 to 7 months from confirmation. The Contractor shall submit the project grant chart and the proposed duration of completion will be taken into consideration for evaluation.
- 6.2 The Contractor shall be required to submit all document to prove the completion of work. The document shall include but not limited to, delivery orders and warranty certificate.
- 6.3 A sum of S\$50 per day capped at 20% of the contract sum per shall be imposed as Liquidated Damages on the Contractor should he fail to complete the works within the stipulated agreed schedule. This may be waived if the Contractor is able to provide that the delay is due to circumstances beyond his control
- 6.4 Under the contract, the payment will be honoured within 60 days of the receipt of invoice and certification by the Company's executive in charge for its release.

STAGE		% Of Contract Price
1.	Upon completion of 100% physical works and submission of all documents to SATS Limited's satisfactory.	100%
<b>TOTAL %</b>		<b>100%</b>

The total Contract Price shall include all works specified in this agreement and quotation breakdown at the total Contract Price S(\$) \_\_\_\_\_

\_\_\_\_\_  
Contractor business/company stamp

\_\_\_\_\_  
Signature of Contractor or its authorized signatory

\_\_\_\_\_  
Full Name and Designation of Contractor or its authorized signatory

\_\_\_\_\_  
Date