



Plantroom Level		WELLNESS CENTRE SWIMMING POOL	WELLNESS CENTRE WEIGHT TRAINING AREA					
AHU reference	UNIT	AHU-02	AHU-01					
Floor Area	m^2	465.68	682.2					
Altitude Above Sea Level	m	1700m	1700m					
Quantity	-	1	1					
AHU arrangement	-	Horizontal	Horizontal					
VAV or CV	-	VAV	VAV					
Control Scheme Code	-	SEE DRAWING	SEE DRAWING					
Airside performance (inlet)								
Supply airflow (@peak sens cool)	m^3/s	11.703	6.331					
Outside air	m^3/s	0.009	1.364					
Return airflow (minimum@econ)	m^3/s	11.694	4.967					
Percentage outside air (design@peak cooling)	%	0%	22%					
CO2 sensor linked to AHU in each space (Refer to floor plans for location).	Yes/No	No	No					

Provisional external system pressure excl filters or coil, OA louver, VCD's and AHU fittings.	<i>Pa</i>	750	750					
Fan Motor Type		EC Plenum fan/DWDI Centrifugal Fan	EC Plenum fan/DWDI Centrifugal Fan					
Fan efficiency	<i>%</i>	75%	75%					
Fan motor speed	<i>rpm</i>	max. 1475	max. 1475					
Fan motor galvanised iron protection gaurd required		Yes	Yes					
Fan on anti-vibration mounts in AHU.		Yes	Yes					
Fan run on steps		Yes	Yes					
AHU complete with VSD		Yes	Yes					
<u>Coil</u>								

Chilled Water/Refrigerant		Refrigerant	Refrigerant					
Coil Cooling Design Conditions								
Airflow (inlet @ peak coil load)	m^3/s	11.703	6.331					
Airflow	m^3/h	42131	22792					
Room condition - summer	$^{\circ}C\ db / \% rh$	28.0 / 60	22.0 / 51					
On coil (@peak cooling)	$^{\circ}C\ db$	28.0	23.9					
	$^{\circ}C\ wb$	21.7	18.6					
Off coil (@peak cooling)	$^{\circ}C\ db$	20.0	13.8					
	$^{\circ}C\ wb$	19.4	13.3					
Sens cooling min	kWs	91.6	63.2					
Total cooling min	kWt	103.0	105.9					
Condensate pan (tray) material	-	Stainless Steel	Stainless Steel					
Heating Design Conditions								
Room condition - winter (min. fr	$^{\circ}C\ db$	22.0	22.0					
Apparatus entering (@peak heat	$^{\circ}C\ db$	14.8	14.8					
Apparatus leaving (@peak heat	$^{\circ}C\ db$	18.4	18.4					
Sensible heating min.	kWs	15.7	22.2					
Coil Air Flow	l/s	11703.0	6331.0					
Heating Steps	No.	3.0	3.0					
Maximum face velocity	m/s	Max 2.5	Max 2.5					
Maximum air pressire drop over coil	Pa	max. 100Pa	max. 100Pa					
Power								
Electric Heating inside AHU	Yes/No	Yes	Yes					
Electric Heating to Diffusers, powered from AHU	Yes/No	No	No					

Fan Motor Power approx (Note actual motor size may be bigger, depending on models)	kW	7.50	7.50					
Normal / Emergency Power	-	Emergency Power	Emergency Power					
Casing								
Minimum plenum panel thickness (25mm in a/c area and less 5m/s)(50mm for <5m/s).	mm	50mm	50mm					
Outside air entry plenum required	Yes/No	Yes	Yes					
Return air entry plenum required	Yes/No	Yes	Yes					

Side access airtight insulated hinged cam-lock doors/panels required into plenum to access filters, coil, fan.	Yes/No	Yes	Yes					
<u>Filters</u>								
50 mm primary filter required	Yes/No	Yes, 600 x 600	Yes, 600 x 600					
All filters high pressure washable	Yes/No	Yes	Yes					
Bag secondary carbon filter.	Yes/No	Yes	Yes					
<u>Frame material</u>		Galvanised	Galvanised					
Air Filters to Spec Merv 13	Yes/No	No	No					
Filters front or plenum withdraw	-	Plenum	Plenum					
<u>Humidifier</u>								
Humidifier	-	None	None					
Dehumidifier	-	Yes	None					
<u>Motorised dampers</u>								
<i>All dampers to be selected on a 65% free area</i>								
OBD -1 - Motorised - Economy at 2.5 m/s	Size, m ²	1.64	1.64					

EACH AIR HANDLING UNIT TO BE BMS COMPATABLE AND TO BE SUPPLIED WITH THE FOLLOWING POINTS:

DESCRIPTION			DATA POINT SCHEDULE					
(CONTROL POINT)	QTY		AI	AO	DI	DO	PI	SOFT
AIR HANDLING UNIT - MONITORING								
Unit Start/Stop Command						1		
Unit Run Status					1			
Unit Fault Status					1			
Unit Fan Speed Control			1					
CHW Valve Command				1				
HW Valve Command				1				
Supply Air Static Pressure			1					
Unit Filter Status			1					
Unit Air Flow Status					1			
Outside Air Temperature			1					
Supply Air Temperature			1					
Return Temperature			1					
Fire Interlock					1			
Fire Damper Position					12			
Pressure Setpoint Adjustment				1				



TYPICAL FIRE HOSEREEL DETAIL
N.T.S

<i>Designed</i>	<i>Drawn</i>	<i>Checked</i>	<i>Appr.</i>	<i>Scale</i>	<i>Size</i>	<i>Date</i>
RC	RC	BM	RC	DRG	A1	13/08/21
<i>Project Number</i>	<i>Division</i>	<i>Service</i>	<i>Drawing Number</i>	<i>Revision</i>		
1082	M	F	001	TD		



GENERAL

1. ALL WORKS TO BE EXECUTED STRICTLY IN ACCORDANCE WITH THE HEALTH AND SAFETY ACT, ACT 85 OF 1993 AS AMENDED.
2. THE CONSTRUCTION REGULATIONS SHALL BE ADHERED TO IN THE EXECUTION AND PLANNING OF WORKS
3. WORKS SHALL BE CONSTRUCTED IN ACCORDANCE WITH APPROVED SHOP DRAWINGS.
4. SHOP DRAWINGS SHALL BE ISSUED FOR APPROVAL A MINIMUM OF 14 DAYS PRIOR TO CONSTRUCTION COMMENCEMENT, SUCH SHOP DRAWINGS SHALL BE COMPILED WITH THE ASSISTANCE OF THE MAIN CONTRACTOR AND VARIOUS TRADES AS REQUIRED TO ENSURE CO-ORDINATION PROVISIONS ARE MADE.
5. THIS DRAWING SHALL NOT BE SCALED, FIGURED DIMENSIONS ONLY SHALL BUILY SHOWN.
6. EXPOSED SERVICES COLORS SHALL BE TO ARCHITECTS SPECIFICATION, CLIENT SPECIFICATION AND NATIONAL STANDARDS.
7. THIS DRAWING IS TO BE READ AND WORKS ARE TO BE EXECUTED IN ACCORDANCE WITH THE RELEVANT PROJECT SPECIFICATIONS, ENGINEERING CODES AND GOOD ENGINEERING PRACTICE, "ROUGH-IN" (TACK AND LOOSELY SUPPORT) ALL PIPING AND FITTINGS FOR THE APPROVAL OF THE ENGINEER PRIOR TO FULL WELDING AND FIRM FIXING.
9. ALL DISCREPANCIES BETWEEN THIS DRAWING AND ACTUAL SITE CONDITIONS SHALL BE BROUGHT TO THE ATTENTION OF THE RESPONSIBLE ENGINEER.
10. THE STRUCTURAL ENGINEER SHALL BE RESPONSIBLE FOR ALL PIPING SUPPORT METHODS WHERE STRUCTURAL FIXING IS EMPLOYED.

UNIT	TOTAL COOLING	SENSIBLE COOLING	HEATING	NOMINAL SUPPLY AIR	FRESH AIR SUPPLY L/S	NOMINAL RETURN AIR	POWER SUPPLY (W / V / Hz)	POWER INPUT	
								NOM. POWER (W)	RATED POWER (W)
AC 01	3.5 KW	3.0 KW	1.3 KW	280 L/S	38 L/S	242 L/S	1/220-240 V 50	28	70
AC 02	1.2 KW	1.0 KW	0.7 KW	84 L/S	23 L/S	61 L/S	1/220-240 V 50	28	70
AC 03	1.2 KW	1.0 KW	0.7 KW	88 L/S	23 L/S	65 L/S	1/220-240 V 50	28	70
AC 04	1.2 KW	1.0 KW	0.8 KW	85 L/S	23 L/S	62 L/S	1/220-240 V 50	28	70
AC 05	2.2 KW	1.6 KW	1.2 KW	125 L/S	60 L/S	65 L/S	1/220-240 V 50	28	70
AC 06	2.7 KW	2.4 KW	1.7 KW	211 L/S	68 L/S	143 L/S	1/220-240 V 50	28	70
AC 07	5.0 KW	3.9 KW	3.5 KW	270 L/S	180 L/S	90 L/S	1/220-240 V 50	103	150
AC 08	7.4 KW	6.5 KW	4.1 KW	604 L/S	75 L/S	529 L/S	1/220-240 V 50	130	150
AC 09	1.1 KW	0.8 KW	0.4 KW	71 L/S	23 L/S	48 L/S	1/220-240 V 50	28	70
AC 10	0.6 KW	0.5 KW	0.3 KW	42 L/S	15 L/S	27 L/S	1/220-240 V 50	28	70
AC 11	0.8 KW	0.7 KW	0.5 KW	49 L/S	23 L/S	26 L/S	1/220-240 V 50	28	70
AC 12	1.9 KW	1.8 KW	1 KW	183 L/S	15 L/S	168 L/S	1/220-240 V 50	28	70
AC 13	3.3 KW	2.9 KW	2.1 KW	250 L/S	75 L/S	175 L/S	1/220-240 V 50	30	70
AC 14	14.4 KW	10.8 KW	5.1 KW	1 141 L/S	220 L/S	921 L/S	1/220-240 V 50	400	450
AC 15	21.2 KW	15.2 KW	6.0 KW	1 684 L/S	170 L/S	1 514 L/S	1/220-240 V 50	747	800
AC 16-1	28 KW	19.6 KW	7.3 KW	2 016 L/S	238.5 L/S	1 903.4 L/S	1/220-240 V 50	800	800
AC 16-2	22.4 KW	15.7 KW	5.8 KW	1 612.89 L/S	186.6 L/S	1 522.8 L/S	1/220-240 V 50	747	800
AC 17	19.5 KW	13.2 KW	4.8 KW	1470 L/S	180 L/S	1 290 L/S	1/220-240 V 50	747	800
AC 19	10.0 KW	7.4 KW	5.9 KW	503 L/S	362 L/S	141 L/S	1/220-240 V 50	209	450
VRF UNIT	147.6KW	151.2 KW	151.2 KW				3 / 400 / 50		7 500

Notes:

1. This drawing may only be used for HVAC services.
2. This drawing is not to be used as a construction/shop drawing. Refer to standard drawings for details on each type of fitting.
3. Routes and zones have been allocated to this service, location dimensions are indicative of these.
4. To prepare his construction/shop drawings, the HVAC sub-contractor must inspect all the architect's drawings including structural and other services design drawings pertaining to the works and shall acquaint himself with the general arrangement of all other services and ensure that in fixing his work it will not obstruct the fixing or future maintenance of other services.
5. Any inclinations must be brought to the attention of the mechanical engineer before close of tender.
6. The HVAC sub-contractor is responsible for correct field dimensions, clearances and heights, quantities, fabrication processes and techniques of construction & co-ordination of his work with that of all other trades providing all devices necessary for safe and satisfactory operation.
7. Final site measurements must be made by the HVAC sub-contractor before manufacturing or ordering of any equipment.
8. Supply and return air ducting to be externally insulated with 25mm thick insulation, FRK or approved equal. Exhaust and fresh air ducting to be un-insulated.
9. Indicated ducting sizes are inside sheetmetal sizes.
10. All ducting to be manufactured, installed and commissioned in compliance with SMACNA/SABS standards.
11. All air diffusion equipment to be powder coated to an architect approved colour.
12. All specified equipment must be installed according to the manufacturer's specification.
13. All HVAC equipment to be protected against vibrations by means of anti-vibration mountings.
14. All duct connections to have flexible connections.
15. The main contractor shall be responsible for all openings in walls, ceilings and doors for HVAC items of equipment.
16. Exposed refrigerant piping, control and electrical wiring to run in suitable sized trunking.
17. This drawing must be read in conjunction with the relevant HVAC specification.
18. The complete installation must be done according to good engineering practice.

Revision

[illegible]

HVAC LEGEND

**CEILING MOUNTED CASSETTE UNIT (VRV)
MOUNTED ON AT CEILING LEVEL SUPPORTED ON GRID**

FRESH AIR DUCTING

CONSTANT VOLUME AIRCON DIFFUSERS

DISC VALVE EXTRACTION

SUPPLY AIR AIRCON DUCTING

HIDEAWAY MOUNTED AIRCON ON UNISTRAT IN CEILING VOID

3-PIPE SYSTEM CHARGE RECOVERY REFRIGERANT PIPEWORK

AIR DAMPER

FLEXIBLE DUCTING

AIRCON CONDENSER

DOOR GRILLS

DUCT RISE/DROP

PACKAGED AIRCON UNIT

EXTRACTION FAN

FRESH AIR FAN

CEILING PLENUM

Client



CONSULTANTS



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Project

EKURHULENI EAST TVET COLLEGE

PROPOSED NEW WELLNESS CENTRE

Title

FLOOR LEVEL HVAC - LAYOUT

<i>Designed</i>	<i>Drawn</i>	<i>Checked</i>	<i>Appr.</i>	<i>Scale</i>	<i>Size</i>	<i>Date</i>
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1082		M	H	001		TD1

The diagram illustrates the roof layout for a building. It features a central area with two AHU-02 packaged units (1000 CFM, 1000 BTU/hr, 1000 BTU/hr) and two AHU-01 packaged units (1000 CFM, 1000 BTU/hr, 1000 BTU/hr). The roof is divided into sections by a central vertical line and a horizontal line. Arrows indicate the direction of roof fall: generally towards the center and then outwards to the edges. A service ladder position is marked near the top center. A note indicates that the roof is to be covered with a single layer of 1/2" thick rigid insulation. A legend at the bottom left defines the symbols for roof fall and the location of the AHU units.

1:175

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[illegible]

EVC - EVAPORATIVE COOLER

AIR HANDLING UNIT



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EKURHULENI EAST TVET COLLEGE

PROPOSED NEW WELLNESS CENTRE

ROOF HVAC - LAYOUT

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1082		M	H	002		TD



Title

FLOOR LEVEL WET SERVICES - LAYOUT

<i>Designed</i>	<i>Drawn</i>	<i>Checked</i>	<i>Appr.</i>	<i>Scale</i>	<i>Size</i>	<i>Date</i>
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