

Location of Access Panels for Inspection / Servicing / Cleaning				
In-Line Equipment	Location	Ductwork Contractor to Provide	Specialist Cleaning Contractor to Provide	
Control Dampers	Both Sides	Up-Stream Panel	Down-Stream Panel	
Fire Dampers	Both Sides	Up-Stream Panel	Opposite Side	
Heating / Cooling / Re-Claim Coils	Both Sides	Up-Stream Panel		
Attenuators (Rectangular)	Both Sides	Up-Stream Panel	Down-Stream Panel	
Attenuators (Circular)	Both Sides	Up-Stream Panel	Down-Stream Panel	
Filter Sections	Both Sides	Up-Stream Panel	Down-Stream Panel	
Air Turning Vanes	Both Sides	Up-Stream Panel	Down-Stream Panel	
Changes in Direction	One Side	Up-Stream Panel	One-Panel to Suit	
In-Duct Fans / Devices	Both Sides	Up-Stream Panel	Down-Stream Panel	
Int'l / Exhaust Louvre	One Side	One Panel to Suit		
Intermediate Cleaning Panels				

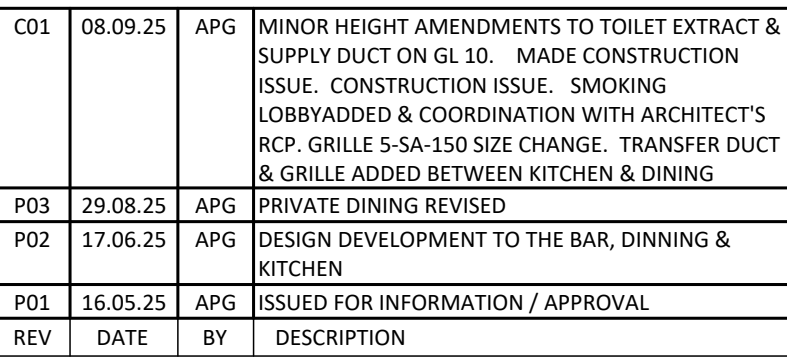
to BSU Frequency Specified in
BESA TR 19 and BESA DW/12/2

In-Line Equipment	Location
Volume Control Dampers	Both Sides
Fire Dampers	Both Sides
Attenuators	Both Sides
Changes in Direction	Both Sides
Filter Sections	Both Sides
Horizontal Ducts	Generally 2m Centres
Risers	Maximum 2m Centres
Extract Fans	Both Sides
Discharge Grille / Mesh	One Side

Duct Size up to Longest Side Major Axis	Recommended Dimension of Openings
200mm	300 x 150mm
300mm	300 x 200mm
400mm	450 x 300mm
500mm and Larger	450 x 450mm

Schedule - Duct Size up to	Schedule - Recommended Dimensions of Openings
310mm	250 x 150mm
450mm	400 x 300mm
550mm	400 x 300mm
600mm and Larger	500 x 400mm

11-22-333 11 GRILLE TYPE
SEE GRILLE TYPE SCHEDULE
22 SYSTEM TYPE
SA SUPPLY AIR
RA RETURN AIR
IA INTAKE/FRESH AIR
EA EXHAUST AIR
33 UNIQUE REFERENCE / MARK



CONSTRUCTION

INDUSTRIAL & COMMERCIAL BUILDING SERVICES ENGINEER
1 ALFRED STREET, WEST VALE, HALIFAX, WEST YORKSHIRE,
HX4 8LT. TEL: 01422 310400
email: electrical@afconnell.com, mechanical@afconnell.com

GM

DRAWING TITLE:
MECHANICAL SERVICES
VENTILATION LAYOUT
GROUND FLOOR WEST

CONTRACT No.	SCALE at A0	DRAWN/CHECKED	D
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C5895	1:50	APG
DRAWING NUMBER		

PROJECT	ORIGINATOR	FUNCTION	VOLUME	LEVEL	TYPE	ROLE	NUMBER
1051	156	53	01	65	D	U	530000

LU51 AFC 57 01 GF D M 5/0002



TECHNICAL SUBMISSION

FOR THE PROPOSED AHUs

AT

**DAKOTA
MANCHESTER AIRPORT**

DOCUMENT REF: L015-AFC-57-01.ZZ-T-M-570001

DATE: 15/05/2025

REV: P01

Document History

Revision	Revised by	Description
P01	APG	Issues for information / approval

Contents

- 1) AHU 1 & AHU 2 Technical Specification Sheets including drawings.
- 2) Supplementary data sheet for the AHU 1 recuperator to illustrate the temperature exchange at the actual design flow rates as the recuperator within the technical specification sheet is has a balanced flow rate for ErP compliance demonstration.
- 3) Reverse Cycle Dx Evaporator Coil for AHU 1 & AHU 2.

GMI comments

- 1. Do the AHU's come in a single section? i.e. not broken down?
- 2. Where is the inverter located and is it suitably IP rated?
- 3. Refer to client team comments
- 4. Acoustic review of collective MEP kit to be done when available to establish if any attenuation is required



TECHNICAL SPECIFICATION SHEETS

Version:AHU SELECT
Version Date: 01/01/2017

PROJECT DETAILS

Original Enquiry Date	Project No	Unit No	Project Reference
25/06/2024	AHQ-00881	AHQ-00881-1-3	Dakota Hotel - Manchester Airport
Customer	Rev Date	EN 1886.	Customer Reference
A.F. Connell	25/06/2024		AHU01 - Ground Floor Areas
Supply Flowrate	Supply Velocity	Return Flowrate	Return Velocity
4.065 m³/s	1.607 m/s	3.135 m³/s	1.500 m/s

UNIT CONSTRUCTION

Unit Location	Framework	Panel Thickness	Panel Internal Sheet
External	50mm profile	45 mm	Galv
Unit Model	Frame Coating	Panel External Sheet	Panel Insulation
Non-standard	Natural	Plastisol Merlin Grey	Mineral Wool 45
Access Side	Base Frame	Roof Type	Reinforced Floor
Right	Folded PGI - 150*75mm	RF-SP-COR	None

SECTION WEIGHTS AND DIMENSIONS

Section No.	Length mm	Width mm	Height mm	Weight kg
A	1600	2300	1385	345
B	2400	2300	2585	1050
C	1500	2300	1535	538
D	800	2300	1185	139
E	1600	2300	1200	403

OVERALL UNIT DIMENSIONS AND CENTRE OF GRAVITY

Length mm	Width mm	Height mm	Weight kg	COG X mm
5500	2300	2585	2475	2710

The overall height includes both the base frame and roof.
The unit is delivered as a single section unless otherwise agreed in writing. Please ensure the unit's dimensions are compatible with site access and suitable for the lifting and shifting equipment available on-site.
If required, the unit can be manufactured in multiple sections for on-site assembly or in a flat-pack form for in-situ erection. Pricing for these additional site services is available upon request.

001 INLET SECTION

Air Flow	Air Velocity	Pressure Drop	Depth	Dimension
4.065 m³/s	2.110 m/s	17 Pa	120 mm	1950 x 990 mm
Damper	Damper Class	Damper Material	Damper Blades	Product
Internal	Standard	Aluminum	Opposed	Spigot 75

001 ACCESS DOOR

Dimension	Type
200 X 1150 mm	Removable panel



TECHNICAL SPECIFICATION SHEETS

Version:AHU SELECT
Version Date: 01/01/2017

002 ELECTRIC HEATING COIL -

Air Volume	Air On Coil Db	Air Off Coil Db	Duty	Air Pressure Drop	Voltage	
4.065 m³/s	-5 °C	5 °C	49.3 kW	5 Pa	400V 3PH 50HZ	
Number of Steps	Maximum Heater Duty	Full Load Current				
1	54 kW	78 A				

002 ACCESS DOOR

Dimension	Type
300 X 1150 mm	Coil Panel

003 ACCESS

Air Flow	Length
4.065 m³/s	500 mm

003 ACCESS DOOR

Dimension	Type
500 X 1150 mm	Hinged door

004 BAG FILTER

Class/Type	Clean Pd	Mean Pd	Dirty Pd	Qty/Size1	Qty/Size2	Qty/Size3	
F7/ Bag	59.7 Pa	154.8 Pa	250 Pa	3 x 592 x 592 x 380 mm	1 x 287 x 592 x 380 mm	3 x 592 x 490 x 380 mm	
Withdrawal	Length	Velocity	Model	Efficiency	Media		
Front	380 mm	1.940 m/s	Soft Pocket Bag Filter	epm2.5 70%	100% Synthetic		

004 ACCESSORIES

Pressure Gauge (Magnehelic) A/DIM,d,d,d,850
Pressure Switch IP65 RH A/DIM,d,d,d,750



TECHNICAL SPECIFICATION SHEETS

Version:AHU SELECT
Version Date: 01/01/2017

005 Plate Heat Exchanger

Model				Qty				Material				Bypass				
PCF-I-3-220-1878-BR-272-A				1				PLAIN_ALUMINIUM				Fitted				
External Dimensions (W x H x D)																
x x																
WINTER																
Fresh Air												Exhaust Air				
m³/s	kW	Eff.%	Inlet		Outlet		Pa	m³/s	kW	Eff.%	Inlet		Outlet		Pa	
			°C	%	°C	%					°C	%	°C	%		
3.135	50.4	82.8	5	100	18.3	41.6	67.9	3.135	50.4	82.8	21	50	9.2	98.9	67.9	
SUMMER																
Fresh Air												Exhaust Air				
m³/s	kW	Eff.%	Inlet		Outlet		Pa	m³/s	kW	Eff.%	Inlet		Outlet		Pa	
			°C	%	°C	%					°C	%	°C	%		
3.135	-15	80.3	30	50	26	63	67.9	3.135	-15	80.3	25	50	29	39.6	67.9	

005 ACCESS DOOR

Dimension	Type
800 X 2200 mm	Hinged door 2VS

005 DRAIN PAN

Material	Size	
Plastic	2200 Mm	

006

006 ACCESS DOOR

Dimension	Type
800 X 2200 mm	Hinged door 2VS

006 DRAIN PAN

Material	Size	
Plastic	2200 Mm	

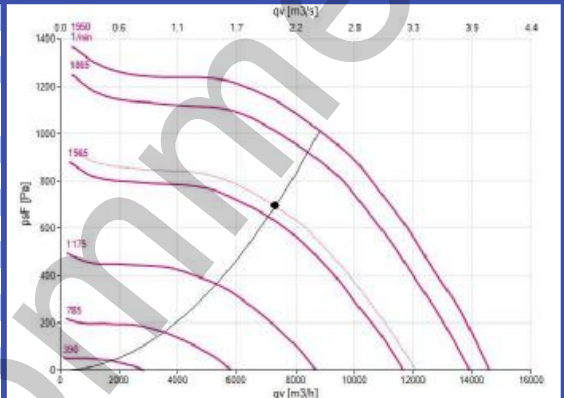


TECHNICAL SPECIFICATION SHEETS

Version:AHU SELECT
Version Date: 01/01/2017

007 SUPPLY PLENUM FAN

Fan Type	Wheel Type	Drive Type
EC	Backward Curve	DirectDrive
Model	Impeller Diam.	Abs Power
GR50I-ZID.GG.CR-116904/A01	500 mm	1.97 kW
Quantity	Duty % Per Fan	Poles
2	Dual Fan (50 %-50 %)	
Air Flow Volume	Outlet Velocity	Motor Speed
4.065 m³/s	0.800 m/s	1950 rpm
Ext Static Pressure	Fan Speed	Power
400 Pa	1603 rpm	3.5 kW
Unit Static Pressure	Static Efficiency	FLC
676.9 Pa	69.8%	5.6 A
Fan Total Pressure	VSD	Volts/Ph/Hz
695 Pa	Inbuilt	400/3/50



Frequency	63 Hz	125 Hz	250 Hz	500 Hz	1k Hz	2k Hz	4k Hz	8k Hz
Inlet (1)	63	78	73	70	64	62	58	56
Outlet (2)	70	83	76	78	75	72	69	64
(1) SWL INSIDE The Inlet Duct (dB)				(2) SWL INSIDE The Outlet Duct (dB)				

007 PLENUM FAN NOTES

This fan cannot be controlled with a variable frequency drive

007 ACCESSORIES

Labels

- Pressure Switch IP65 RH A/DIM,d,d,d,950
- Isolator 20A RH A/DIM,d,d,d,100
- Terminal Box RH/DIM,d,d,d,250

008 ACCESS

Air Flow	Length
4.065 m³/s	700 mm

008 ACCESS DOOR

Dimension	Type
700 X 1150 mm	Hinged door



TECHNICAL SPECIFICATION SHEETS

Version:AHU SELECT
Version Date: 01/01/2017

009 REVERSE CYCLE DX COIL

Air Volume	Air On Coil Db	Air On Coil Wb	Air On RH	Construction	Inlet connection
4.065 m³/s	23.0 °C	16.2 °C	50.0 %	Copper/ Aluminium	2 x 7/8"
Face Velocity	Air OFF Coil Db	Air Off Coil Wb	Air Off RH	Rows/Fins	Outlet connection
2.65 m/s	20.0 °C	15.2 °C	60 %	2 R / 4.23mm (6/inch) F	2 x 1/2"
Duty	Medium	Air Pd	No of Sections	Eliminators	Temp(Dt)
14.6 kW	Refrigerant R32	47 Pa	2 Interlaced	not needed BUT fit P400	14.0 21.0
Evap Temp	Internal Vol	Casing Mat	kPA		Heating Duty
6.0 kW	12.0	Galv	25		35.6



009 ACCESSORIES

Ball Syphon Drain Trap
Labels

009 ACCESS DOOR

Dimension	Type
450 X 1150 mm	Coil Panel

010 OUTLET SECTION

Air Flow	Air Velocity	Pressure Drop	Depth	Dimension
4.065 m³/s	1.610 m/s	0 Pa	None	2200 x 1150 mm
Damper	Damper Class	Damper Material	Damper Blades	Product
None	None	None	None	Spigot 75

011 INLET SECTION

Air Flow	Air Velocity	Pressure Drop	Depth	Dimension
3.135 m³/s	1.780 m/s	0 Pa	None	2200 x 800 mm
Damper	Damper Class	Damper Material	Damper Blades	Product
None	None	None	None	Spigot 75

0012 ACCESS

Air Flow	Length
3.135 m³/s	500 mm

012 ACCESS DOOR

Dimension	Type
500 X 950 mm	Hinged door



TECHNICAL SPECIFICATION SHEETS

Version:AHU SELECT
Version Date: 01/01/2017

013 PANEL FILTER

Class/Type	Clean Pd	Mean Pd	Dirty Pd	Qty/Size1	Qty/Size2	Qty/Size3	
G4 / Panel	39 Pa	94.5 Pa	150 Pa	3 x 592 x 592 x 48 mm	1 x 287 x 592 x 48 mm	3 x 592 x 287 x 48 mm	
Withdrawal	Length	Velocity	Model	Efficiency	Media		
Front	50 mm	1.810 m/s	Aeropleat	Coarse 65% (ISO 16890)	Cotton & Synthetic Fibre		

013 ACCESSORIES

Pressure Gauge (Magnehelic) A/DIM,d,d,d,850
Pressure Switch IP54 RH A/DIM,d,d,d,700

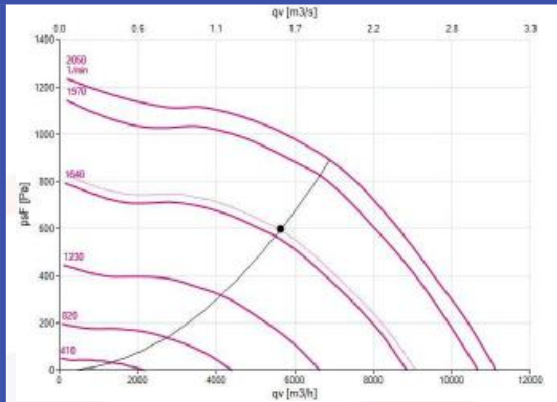
014 EXHAUST PLENUM FAN

Fan Type		Wheel Type	Drive Type	
EC		Backward Curve	Direct Drive	
Model		Impeller Diam.	Abs Power	
GR45I-ZID.DG.CR-116901/A01		450 mm	1.32 kW	
Quantity		Duty % Per Fan	Poles	
2		Dual Fan (50%-50%)		
Air Flow Volume		Outlet Velocity	Motor Speed	
3.135 m³/s		0.750 m/s	2050 rpm	
Ext Static Pressure		Fan Speed	Power	
400 Pa		1663 rpm	2.4 kW	
Unit Static Pressure		Static Efficiency	FLC	
578.9 Pa		68.8%	3.9 A	
Fan Total Pressure		VSD	Volts/Ph/Hz	
595.3 Pa		Inbuilt	400/3/50	

Frequency	63 Hz	125 Hz	250 Hz	500 Hz	1k Hz	2k Hz	4k Hz	8k Hz
Inlet (1)	65	76	72	68	62	60	57	53
Outlet (2)	69	82	73	74	71	67	63	59

(1) SWL INSIDE The Inlet Duct (dB)

(2) SWL INSIDE The Outlet Duct (dB)



014 PLENUM FAN NOTES

This fan cannot be controlled with a variable frequency drive



TECHNICAL SPECIFICATION SHEETS

Version:AHU SELECT
Version Date: 01/01/2017

014 ACCESSORIES

Labels
Pressure Switch IP65 RH A/DIM,d,d,d,850
Isolator 20A RH A/DIM,d,d,d,100
Terminal Box RH/DIM,d,d,d,250

0015 ACCESS

Air Flow	Length
3.135 m³/s	1000 mm

015 ACCESS DOOR

Dimension	Type
800 X 950 mm	Hinged door

016 OUTLET SECTION

Air Flow	Air Velocity	Pressure Drop	Depth	Dimension
3.135 m³/s	2.040 m/s	16 Pa	120 mm	1950 x 790 mm
Damper	Damper Class	Damper Material	Damper Blades	Product
Internal	Standard	Aluminum	Opposed	Spigot 75

AHU ACOUSTIC DATA

Description	63Hz	125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	Overall dB(A)
Outlet Sound Power(dB) Supply	71	84	77	79	76	73	68	62	81
Inlet Sound Power(dB) Supply	64	77	71	67	58	51	41	38	68
Outlet Sound Power(dB) Exhaust	72	85	76	77	74	70	66	62	79
Inlet Sound Power(dB) Exhaust	66	75	70	65	56	49	40	35	66
Case Breakout sound power (dB)	47	53	39	35	24	20	16	12	39

SPECIFIC FAN POWER

Supply Fan	Extract Fan
Filter Conditions	Filter Conditions
Clean	Clean
Absorbed Power	Absorbed Power
3.38 Kw	2.39 Kw
Drive Efficiency	Drive Efficiency
100%	100%
Inverter Efficiency	Inverter Efficiency
100%	100%
Motor Efficiency	Motor Efficiency
100%	100%
Air Volume	Air Volume
4.065 m³/s	3.135 m³/s
Motor Efficiency Class	Motor Efficiency Class
EC	EC
AHU SFP	
1.42 Kw/m³/s	



07/05/2025



		AHU No.	1	Not To Scale. All dimensions shown are in mm Production stage or color.												No.	Revision	Date		
Customer	A.F. Connell	Model	Non-standard						Initial	Date										
	Dakota Hotel - Manchester Airport	Air flow	4.07						Selected											
	AHU01 - Ground Floor Areas	Quantity	1						Approved	m ³ /s										
Location									Dwg No.	Nos.										
										UNIT B, NATIONAL COURT, POX WY., LEEDS, LS10 1PQ UK Ph: (+44) 0113 218 6100 Fax: (+44) 0113 218 6100										



07/05/2025



TECHNICAL SPECIFICATION SHEETS

Version:AHU SELECT
Version Date: 01/01/2017

PROJECT DETAILS

Original Enquiry Date	Project No	Unit No	Project Reference
25/06/2024	AHQ-00881	AHQ-00881-2-3	Dakota Hotel - Manchester Airport
Customer	Rev Date	EN 1886.	Customer Reference
A.F. Connell	25/06/2024		AHU02 - Kitchen Supply
Supply Flowrate	Supply Velocity		
4.730 m ³ /s	1.556 m/s		

UNIT CONSTRUCTION

Unit Location	Framework	Panel Thickness	Panel Internal Sheet
External	50mm profile	45 mm	Galv
Unit Model	Frame Coating	Panel External Sheet	Panel Insulation
Non-standard	Natural	Plastisol Merlin Grey	Mineral Wool 45
Access Side	Base Frame	Roof Type	Reinforced Floor
Right	Folded PGI - 150*75mm	RF-SP-COR	None

SECTION WEIGHTS AND DIMENSIONS

Section No.	Length mm	Width mm	Height mm	Weight kg
A	3550	1700	2000	1099

OVERALL UNIT DIMENSIONS AND CENTRE OF GRAVITY

Length mm	Width mm	Height mm	Weight kg	COG X mm
3550	1700	2285	1099	1906
The overall height includes both the base frame and roof. The unit is delivered as a single section unless otherwise agreed in writing. Please ensure the unit's dimensions are compatible with site access and suitable for the lifting and shifting equipment available on-site. If required, the unit can be manufactured in multiple sections for on-site assembly or in a flat-pack form for in-situ erection. Pricing for these additional site services is available upon request.				

001 INLET SECTION

Air Flow	Air Velocity	Pressure Drop	Depth	Dimension
4.730 m ³ /s	2.270 m/s	19 Pa	120 mm	1300 x 1600 mm
Damper	Damper Class	Damper Material	Damper Blades	Product
Internal	Standard	Aluminum	Opposed	Spigot 75

001 ACCESS DOOR

Dimension	Type
200 X 1900 mm	Removable panel



TECHNICAL SPECIFICATION SHEETS

Version:AHU SELECT
Version Date: 01/01/2017

002 ELECTRIC HEATING COIL -

Air Volume	Air On Coil Db	Air Off Coil Db	Duty	Air Pressure Drop	Voltage	
4.730 m³/s	-5 °C	5 °C	57.3 kW	22 Pa	400V 3PH 50HZ	
Number of Steps	Maximum Heater Duty					
1	60 kW					

002 ACCESS DOOR

Dimension	Type
300 X 1900 mm	Coil Panel

003 ACCESS

Air Flow	Length
4.730 m³/s	500 mm

003 ACCESS DOOR

Dimension	Type
500 X 1900 mm	Hinged door

004 BAG FILTER

Class/Type	Clean Pd	Mean Pd	Dirty Pd	Qty/Size1	Qty/Size2	Qty/Size3	
F7/ Bag	51.7 Pa	150.8 Pa	250 Pa	6 x 592 x 592 x 380 mm	3 x 287 x 592 x 380 mm	None	
Withdrawal	Length	Velocity	Model	Efficiency	Media		
Front	380 mm	1.810 m/s	Soft Pocket Bag Filter	epm2.5 70%	100% Synthetic		

004 ACCESSORIES

Pressure Gauge (Magnehelic) A/DIM,d,d,d,1800
Pressure Switch IP65 RH A/DIM,d,d,d,1650



TECHNICAL SPECIFICATION SHEETS

Version:AHU SELECT
Version Date: 01/01/2017

005 SUPPLY PLENUM FAN

Fan Type	Wheel Type	Drive Type
EC	Backward Curve	DirectDrive
Model	Impeller Diam.	Abs Power
GR40I-ZID.DG.CR-116896/A01	400 mm	1.24 kW
Quantity	Duty % Per Fan	Poles
4	Quad Fan (25%) V	
Air Flow Volume	Outlet Velocity	Motor Speed
4.730 m³/s	0.390 m/s	2500 rpm
Ext Static Pressure	Fan Speed	Power
460 Pa	1986 rpm	2.5 kW
Unit Static Pressure	Static Efficiency	FLC
713 Pa	67.9%	4 A
Fan Total Pressure	VSD	Volts/Ph/Hz
728.1 Pa	Inbuilt	400/3/50

Frequency	63 Hz	125 Hz	250 Hz	500 Hz	1k Hz	2k Hz	4k Hz	8k Hz
Inlet (1)	64	75	70	68	65	63	58	55
Outlet (2)	68	83	75	78	75	71	65	61
	(1) SWL INSIDE The Inlet Duct (dB)				(2) SWL INSIDE The Outlet Duct (dB)			

005 PLENUM FAN NOTES

This fan cannot be controlled with a variable frequency drive

005 ACCESSORIES

Labels

4 FAN DB

006 ACCESS

Air Flow	Length
4.730 m³/s	700 mm

006 ACCESS DOOR

Dimension	Type
700 X 1900 mm	Hinged door



TECHNICAL SPECIFICATION SHEETS

Version:AHU SELECT
Version Date: 01/01/2017

007 REVERSE CYCLE DX COIL

Air Volume	Air On Coil Db	Air On Coil Wb	Air On RH	Construction	Inlet connection
4.730 m³/s	30 °C	22 °C	50 %	Copper/ Aluminium	4 x 7/8"
Face Velocity	Air OFF Coil Db	Air Off Coil Wb	Air Off RH	Rows/Fins	Outlet connection
2.230 m/s	18.0 °C	16.0 °C	83.5 %	3 R / 3.18mm (8/inch) F	4 x 1/2"
Duty	Medium	Air Pd	No of Sections	Eliminators	Temp(Dt)
106.7 kW	Refrigerant R32	61 Pa	4	needed - fit P400	5.0 16.0
Evap Temp	Internal Vol	Casing Mat	kPA		Heating Duty
6.0 kW	28.0	Galv	25		66.7



007 ACCESSORIES

Ball Syphon Drain Trap
Labels

007 ACCESS DOOR

Dimension	Type
550 X 1900 mm	Coil Panel

008 OUTLET SECTION

Air Flow	Air Velocity	Pressure Drop	Depth	Dimension
4.730 m³/s	2.270 m/s	0 Pa	None	1300 x 1600 mm
Damper	Damper Class	Damper Material	Damper Blades	Product
None	None	None	None	Spigot 75

AHU ACOUSTIC DATA SUPPLY SECTION

Description	63Hz	125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	Overall dB(A)
Outlet Sound Power(dB)	74	89	81	84	81	77	69	64	86
Inlet Sound Power(dB)	72	81	76	74	69	64	54	51	75
Case Breakout sound power (dB)	41	48	34	31	22	17	10	7	34

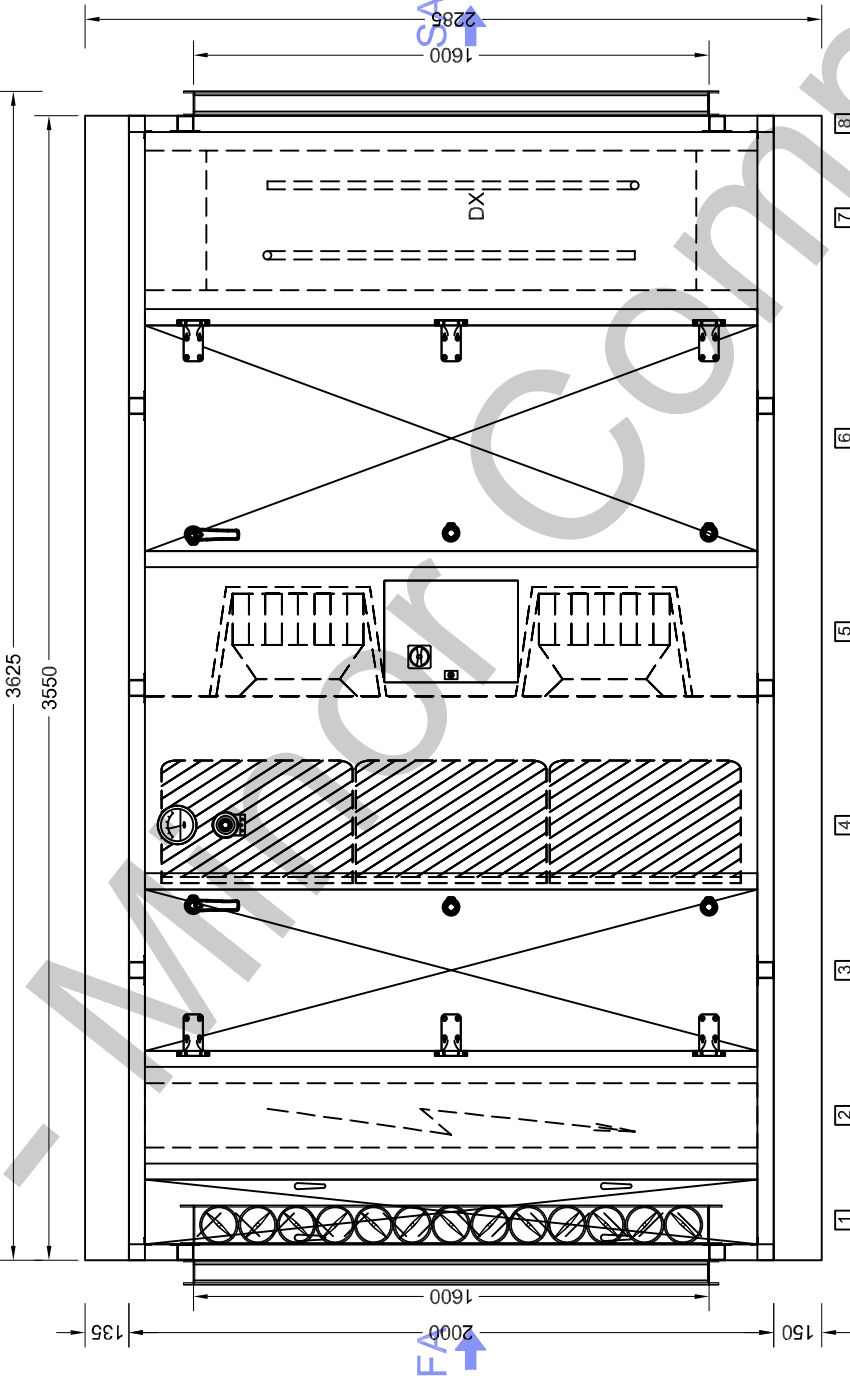


TECHNICAL SPECIFICATION SHEETS

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Version Date: 01/01/2017

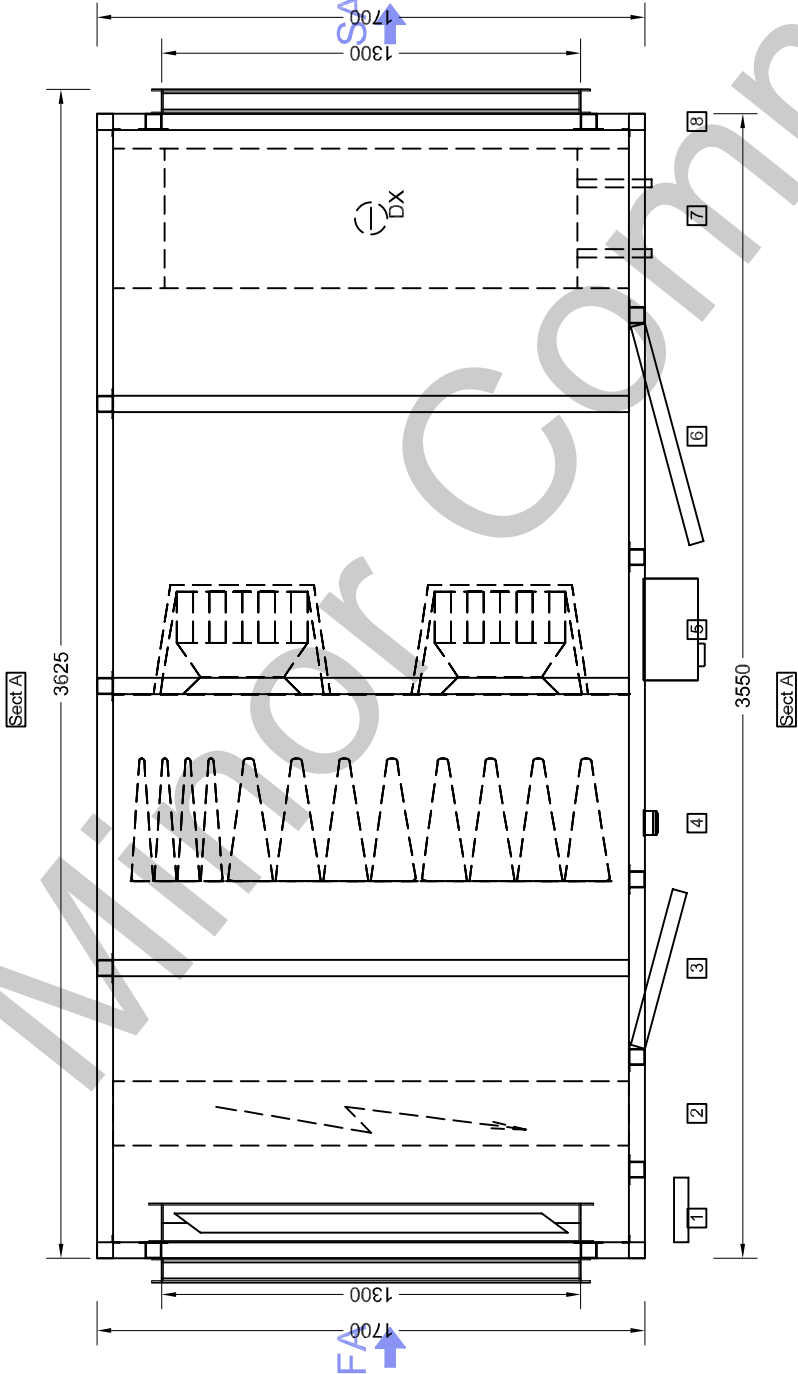
SPECIFIC FAN POWER

Supply Fan		Extract Fan	
Filter Conditions	Clean	Filter Conditions	
Absorbed Power	4.26 Kw	Absorbed Power	
Drive Efficiency	100%	Drive Efficiency	
Inverter Efficiency	100%	Inverter Efficiency	
Motor Efficiency	100%	Motor Efficiency	
Air Volume	4.730 m³/s	Air Volume	
Motor Efficiency Class	EC	Motor Efficiency Class	
AHU SFP	0.91 Kw/m³/s		



Supply: Non-standard
Size: 4.7300 m3/s
Airflow: 460 Pa
E.S.P.: 2.23 m/s
Coil Vel: 1098.60 kg
Unit Wgt: 1098.60 kg

Section A:		Length(mm)
S.No	Module	
1	Inlet Section	250
2	Electric Heater Battery	350
3	Access Section	500
4	Bag Filter	450
5	Plenum Fan	600
6	Access Section	750
7	DX Cooling coil	600
8	Outlet Section	



PLAN DECK

CUSTOMER COMMENTS / APPROVAL			
UNIT LOCATION	INTERNAL / EXTERNAL		
ACCESS HANDLING - IN / OUT	LEFT HAND / RIGHT HAND		
APPROVED BY			
DATE			

 SOVEREIGN AIR MOVEMENT			UNIT B, NATIONAL COURT 100 W. HWY. 1, LEEDS, LS10 1NS		Ph: (444) 0113 218 6100	Fax: (444) 0113 6101
			Not To Scale		All Dimensions shown are as indicated. Detailed drawings to be produced in accordance with the contract.	
			All Dimensions shown are in mm			
			Not To Scale			
Customer	AHU No.	2	Initial		Date	
	Model	Non-standard				
	Air flow	4.73	Selected		Approved	
	Quantity	1	m3/s		Dwg No.	
Project	Dakota Hotel - Manchester Airport					
Location	AHU02 - Kitchen Supply					

Customer: Sovereign Air Movement
Your Ref: Dakota Manchester Airport

Dear Sir

Item: 1 Reverse Cycle DX Evaporator Coil AHU01

Quantity	1		
Specific Vol.(Std.)	0.832	m3/kg	Coil Code 1/2-24-2-6-1965(4)R1.87
Air Volume (Std.)	4.07	m3/s	Dry Weight 92 kg
Air On Dry Bulb	23.0	°C	Fin Material 0.15 mm Aluminium
Air On Wet Bulb	16.2	°C	Tube Material 1/2" o.d. Copper x 0.51
Air On R.H.	50.0	%	Casing Material Pre-Galv. Steel
Air Off Dry Bulb	20.0	°C	No. Sections 2 Interlaced
Air Off Wet Bulb	15.2	°C	Liquid Conn. 2x1/2"
Air Off R.H.	60.0	%	Suction Conn. 2x7/8"(22mm'X'+4mm Cap)
-	-	-	Connection Type Plain O.D.
Cooling Load	14.6	kW	Coil Type AHU + d/tray
S.H.Ratio	100	%	Drain Size 3/4" inches
Refrigerant	32		Moisture Extraction 0 kg/hr
Evaporating(Dew) Temp	6.0	°C	Rows 2
Liquid Temp. at TEV	45.0	°C	Circuits 4
Superheat	5.0	°K	Fin Spacing 4.23mm(6/inch)
Refrigerant P.D.(Pressure)	11	kPa	Air Flow Horizontal
Refrigerant P.D.(Temperature)	0.4	°K	Eliminators not needed BUT fit P400
Finned Height	762	mm	Face Velocity 2.7 m/s
Finned Length	1965	mm	Air p.d. 47 Pa
Internal Volume	12.0	litres	
Max Working Pressure (DX)	33	Bar(g)	Test Pressure 47 Bar(g)
Overall Height	870	mm	Overall Depth 342 mm
Overall Length	2150	mm	Connection Orientation Standard

Heating Duty Air On: 14.0°C Air Off: 21.0°C Duty: 35.6kW Condensing Temp.: 40.0°C

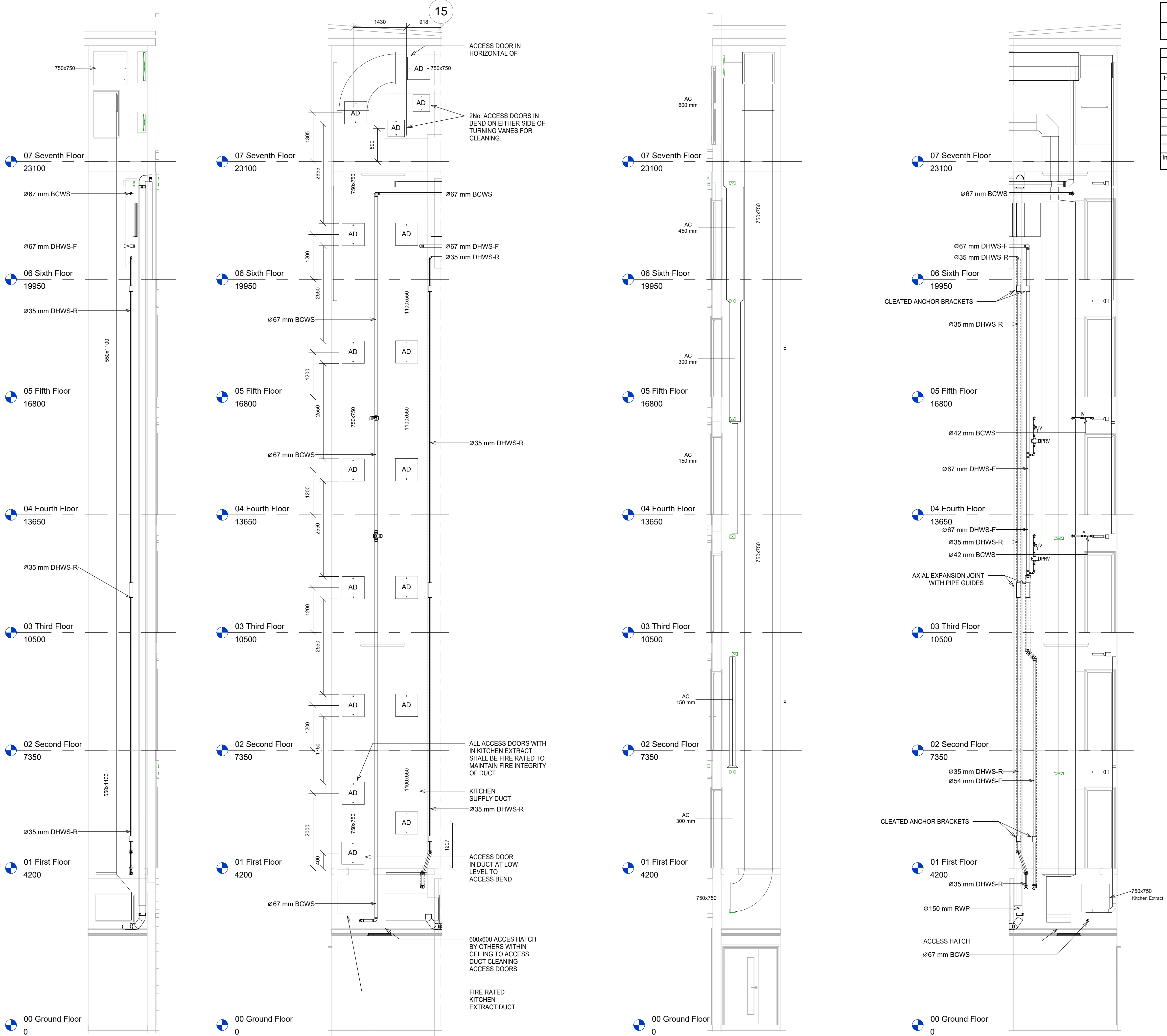
Notes: Sensor Pockets. USE 0.71mm RETURN BENDS

Item: 2 Reverse Cycle DX Evaporator Coil AHU 02

Quantity	1		
Specific Vol.(Std.)	0.832	m3/kg	Coil Code 1/2-53.IDT-3-8-1360(19)R2.98
Air Volume (Std.)	4.73	m3/s	Dry Weight 186 kg
Air On Dry Bulb	30.0	°C	Fin Material 0.15 mm Aluminium
Air On Wet Bulb	22.0	°C	Tube Material 1/2" o.d. Copper x 0.51
Air On R.H.	50.0	%	Casing Material Pre-Galv. Steel
Air Off Dry Bulb	18.0	°C	No. Sections 4 Interlaced
Air Off Wet Bulb	16.2	°C	Liquid Conn. 4x1/2"
Air Off R.H.	83.5	%	Suction Conn. 4x7/8"(22mm'X'+4mm Cap)
-	-	-	Connection Type Plain O.D.
Cooling Load	106.7	kW	Coil Type AHU + d/tray
S.H.Ratio	64	%	Drain Size 3/4" inches
Refrigerant	32		Moisture Extraction 52 kg/hr
Evaporating(Dew) Temp	6.0	°C	Rows 3
Liquid Temp. at TEV	45.0	°C	Circuits 19
Superheat	5.0	°K	Fin Spacing 3.18mm(8/inch)
Refrigerant P.D.(Pressure)	15	kPa	Air Flow Horizontal
Refrigerant P.D.(Temperature)	0.5	°K	Eliminators not needed BUT fit P400
Finned Height	1683	mm	Face Velocity 2.1 m/s
Finned Length	1360	mm	Air p.d. 46 Pa
Internal Volume	28.0	litres	
Max Working Pressure (DX)	33	Bar(g)	Test Pressure 47 Bar(g)
Overall Height	1800	mm	Overall Depth 460 mm
Overall Length	1550	mm	Connection Orientation Standard

Heating Duty Air On: 5.0°C Air Off: 16.0°C Duty: 68.7kW Condensing Temp.: 40.0°C

Notes: Sensor Pockets. USE 0.71mm RETURN BENDS



Location of Access Panels for Inspection / Servicing / Cleaning			
In-Line Equipment	Location	Ductwork Contractor to Provide	Specialist Cleaning Contractor to Provide
Control Dampers	Both Sides	Up-Stream Panel	Down-Stream Panel
Fire Dampers	Both Sides	To Suit Damper Maintenance	Opposite Side
Heating / Cooling / Re-Claim Coils	Both Sides	Up-Stream Panel	
Attenuators (Rectangular)	Both Sides	Up-Stream Panel	Down-Stream Panel
Attenuators (Circular)	Both Sides	Up-Stream Panel	Down-Stream Panel
Filter Sections	Both Sides	Up-Stream Panel	Down-Stream Panel
Air Turning Vanes	Both Sides	Up-Stream Panel	Down-Stream Panel
Changes in Direction	One Side		One-Panel to Suit
In-Duct Fans / Devices	Both Sides	Up-Stream Panel	Down-Stream Panel
Inlet / Exhaust Louvre	One Side	One Panel to Suit	
Intermediate Cleaning Panels			to Suit Frequency Specified in BESA TR 19 and BESA DW/172

Location of Access Panels for Inspection / Servicing / Cleaning for Kitchen Extract

In-Line Equipment	Location
Volume Control Dampers	Both Sides
Fire Dampers	Both Sides
Attenuators	Both Sides
Changes in Direction	Both Sides
Filter Sections	Both Sides
Horizontal Ducts	Generally 2m Centres
Risers	Maximum 2m Centres
Extract Fans	Both Sides
Discharge Grille / Mesh	One Side

Minimum Size of Access Panels...

Duct Size up to Longest Side Major Axis	Recommended Dimension of Openings
200mm	300 x 150mm
300mm	300 x 200mm
400mm	450 x 300mm
500mm and Larger	450 x 450mm

C01	03.02.26	APG	MADE CONSTRUCTION ISSUE
P02	15.05.25	APG	DESIGN DEVELOPMENT
P01	02.04.25	APG	FOR INFORMATION/APPROVAL
REV	DATE	BY	DESCRIPTION

DRAWING STATUS:

CONSTRUCTION

A. F. CONNELL LTD EST. 1989

INDUSTRIAL & COMMERCIAL BUILDING SERVICES ENGINEERS
NEWCOMBE MILL, ROSEMOUNT ESTATES, ELLAND, HYS OEE
HX4 8LT. TEL: 01422 310400
email: electrical@afconnell.com, mechanical@afconnell.com

CHAS **ASSURED** **CONSTRUCTION** **BESA**

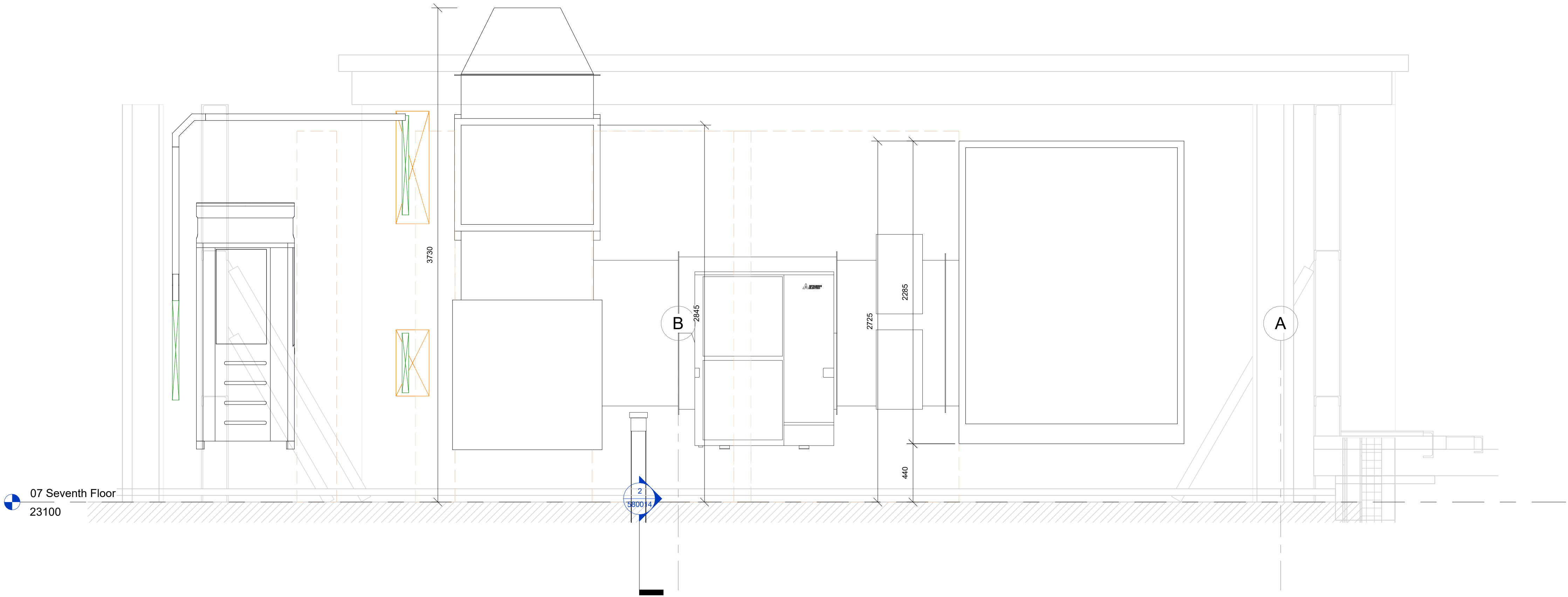
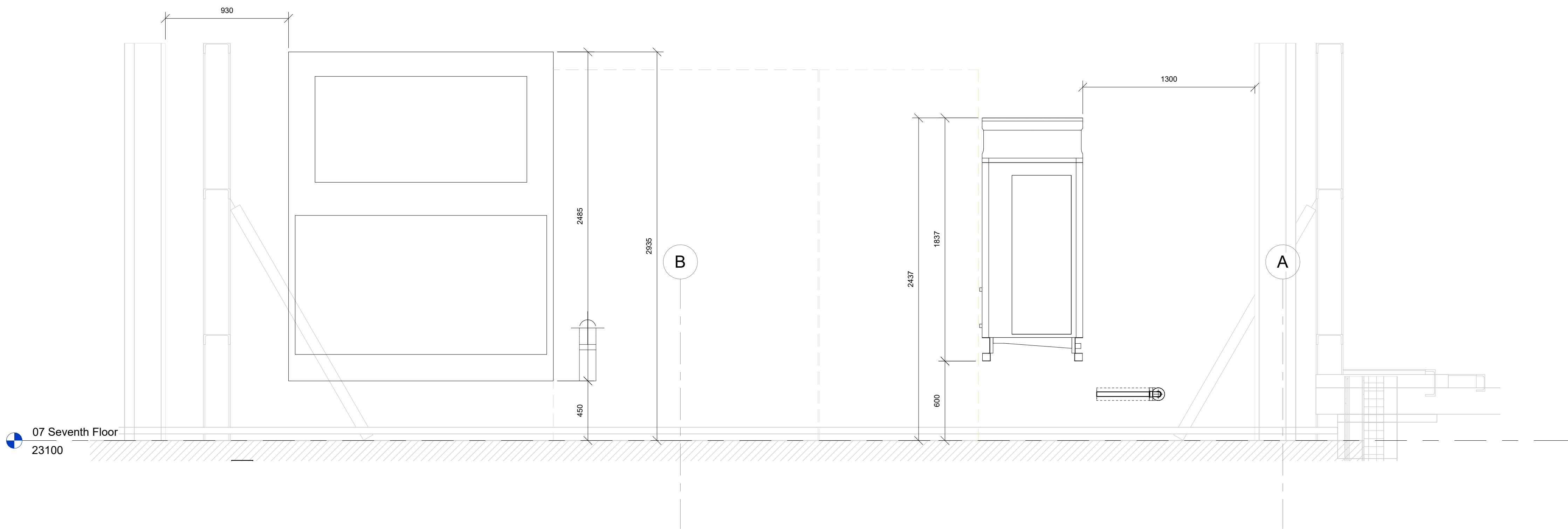
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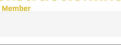
PROJECT
DAKOTA HOTEL
ENTERPRISE WAY
MANCHESTER AIRPORT

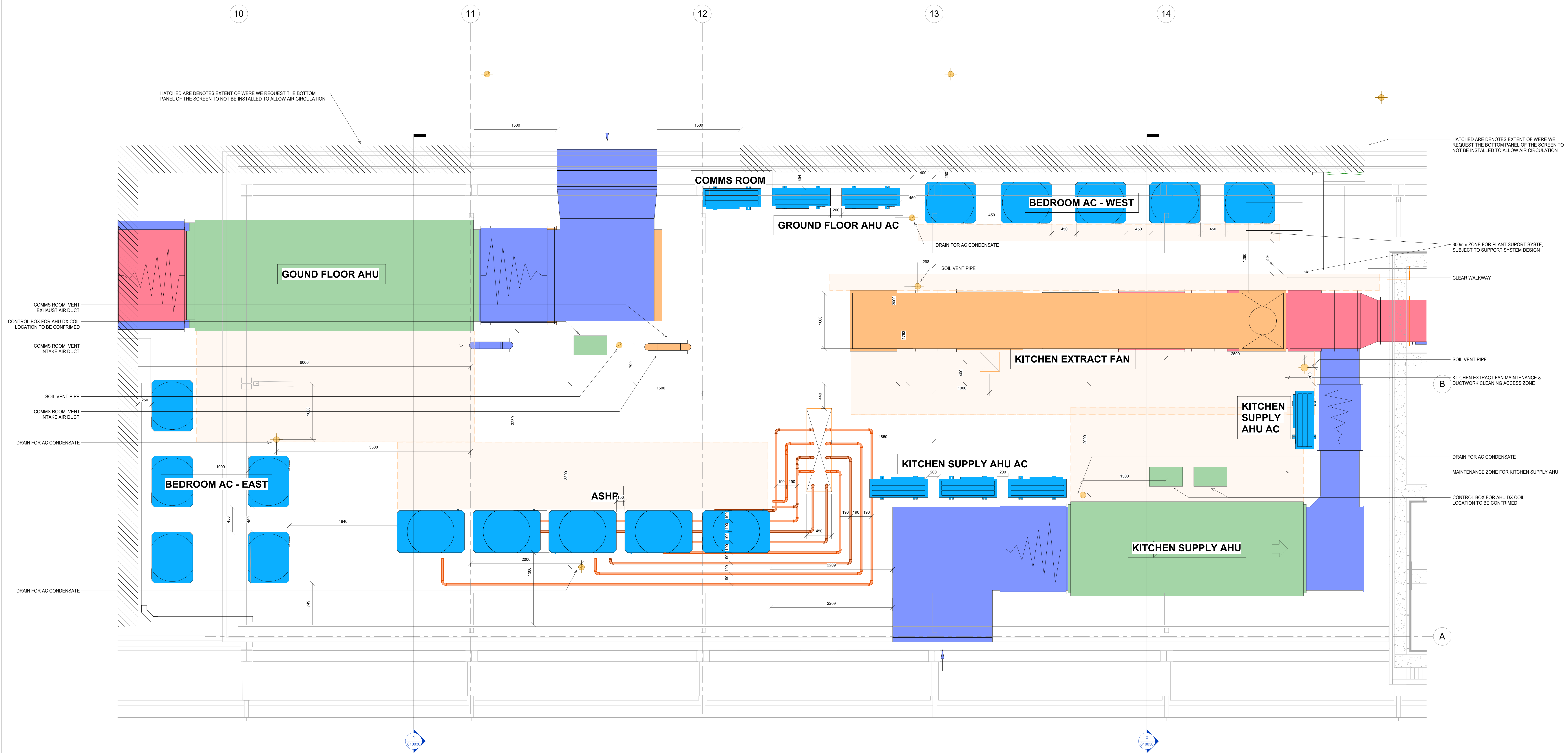
DRAWING TITLE:
MECHANICAL SERVICES
STAIR CORE 2
RISER SECTIONS

CONTRACT No.	SCALE at A1	DRAWN/CHECKED	DATE
C5895	1 : 50	Author/Checker	

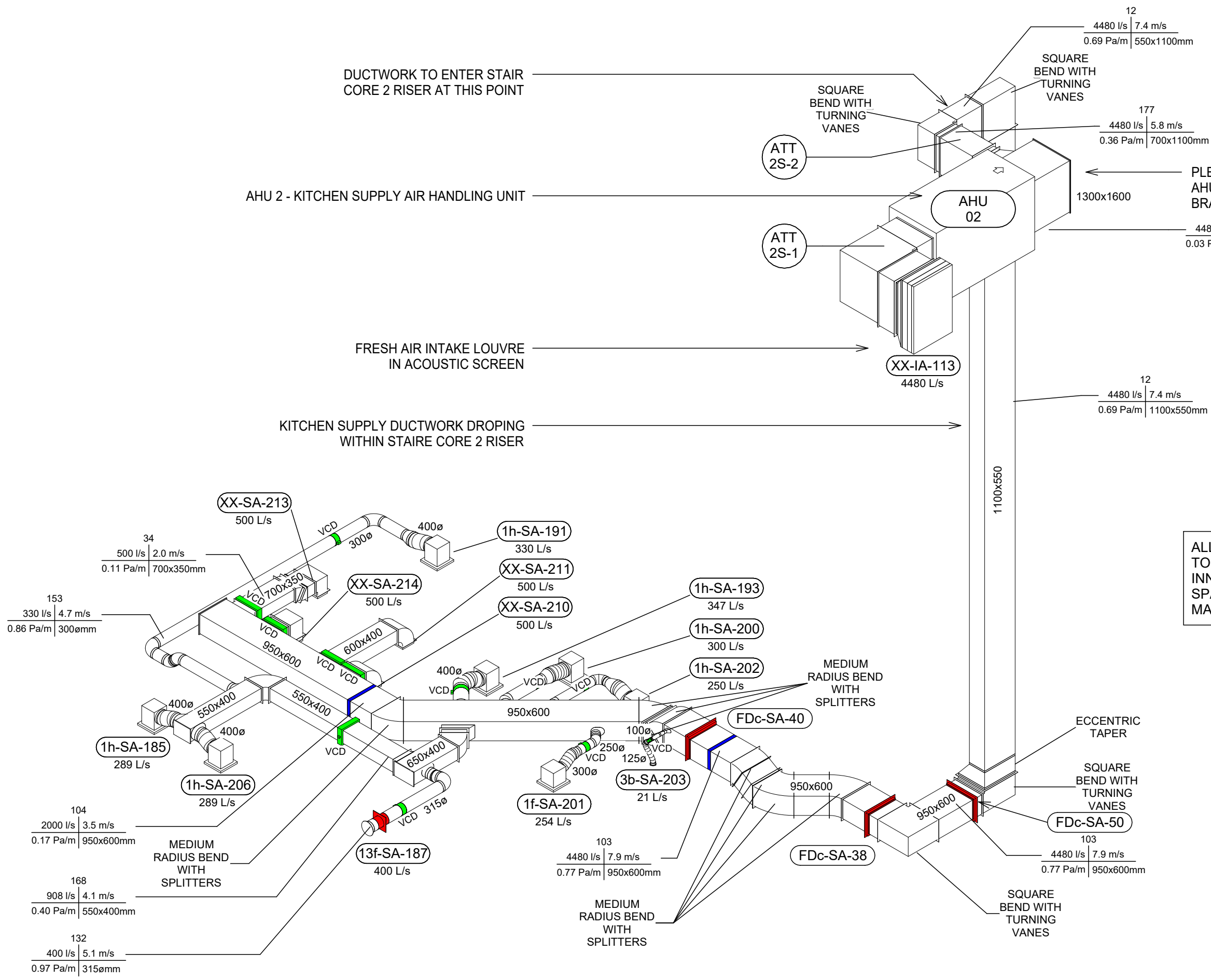
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P01	04.02.25	APG	ISSUED FOR INFORMATION / APPROVAL			
REV	DATE	BY	DESCRIPTION			
DRAWING STATUS:						
INFORMATION						
A. F. CONNELL LTD						
INDUSTRIAL & COMMERCIAL BUILDING SERVICES ENGINEERS						
NEWCOMBE MILL, ROSEMOUNT ESTATES, ELLAND, HX5 0EE						
HX4 8LT. TEL: 01422 310400						
email: electrical@afconnell.com, mechanical@afconnell.com						
						
						
						
						
						
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PROJECT						
DAKOTA HOTEL						
ENTERPRISE WAY						
MANCHESTER AIRPORT						
DRAWING TITLE:						
MECHANICAL SERVICES						
PLANT DECK SECTIONS						
CONTRACT No.		SCALE at A1		DRAWN/CHECKED		
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DATE		DATE		DATE		
JAN 2025		JAN 2025		JAN 2025		
DRAWING NUMBER						
PROJECT	ORIGINATOR	FUNCTION	VOLUME	LEVEL		
L051	AFC	ZZ	01	RF		
TYPE	ROLE	NUMBER	REVISION			
D	M	810030	P01			



REV	DATE	BY	DESCRIPTION
P01	04.02.25	APG	ISSUED FOR INFORMATION / APPROVAL
DRAWING STATUS:			
INFORMATION			
A. F. CONNELL LTD			
INDUSTRIAL & COMMERCIAL BUILDING SERVICES ENGINEERS			
1 ALFRED STREET, WEST VALE, HALIFAX, WEST YORKSHIRE,			
HA10 8LT, TEL: 01422 310400			
email: electrical@afconnell.com, mechanical@afconnell.com			
   			
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PROJECT			
DAKOTA HOTEL			
ENTERPRISE WAY			
MANCHESTER AIRPORT			
DRAWING TITLE:			
MECHANICAL SERVICES			
PLANT DECK LAYOUT			
CONTRACT No.	SCALE at A0	DRAWN/CHECKED	DATE
C5895	1:25	Checker	JAN 2025
DRAWING NUMBER	PROJECT	ORGANISATION	FUNCTION
L051	AFC	ZZ	01
LEVEL	TYPE	SCALE	NUMBER
RF	D	Z	810028
REVISION	P01		



ALL TURNING VANES WITHIN SQUARE BENDS TO BE DOUBLE SKIN AEROFOIL TYPE WITH INNER RADIUS OF 50mm AND MAXIMUM SPACING BETWEEN VANES OF 60mm. MAXIMUM UNSUPPORTED LENGTH 1250mm.

- NOTE
1. STATIC PRESSURE READINGS TO BE PROVIDED AS PART OF THE COMMISSIONING PROCESS ON THE AHU INTAKE, EXHAUST, SUPPLY & EXTRACT AFTER THE ATTENUATION.
 2. STATIC PRESSURE READINGS TO BE PROVIDED AS PART OF THE COMMISSIONING PROCESS ON THE INDEX TERMINAL OF EACH MAJOR BRANCH.
 3. THE POWER CONSUMPTION OF THE INDIVIDUAL FANS SHALL BE RECORDED ON THE COMPLETION OF THE COMMISSIONING PROCESS.

C01	29.07.25	APG	CONSTRUCTION ISSUE
P03	17.06.25	APG	DESIGN DEVELOPMENT TO THE BAR, DINNING & KITCHEN
P02	16.05.25	APG	ISSUED FOR INFORMATION / APPROVAL
P01	04.02.25	APG	ISSUED FOR INFORMATION / APPROVAL
REV	DATE	BY	DESCRIPTION

DRAWING STATUS:

CONSTRUCTION

A. F. CONNELL LTD
Est. 1969

INDUSTRIAL & COMMERCIAL BUILDING SERVICES ENGINEERS
1 ALFRED STREET, WEST VALE, HALIFAX, WEST YORKSHIRE, HX4 8LT. TEL: 01422 310400
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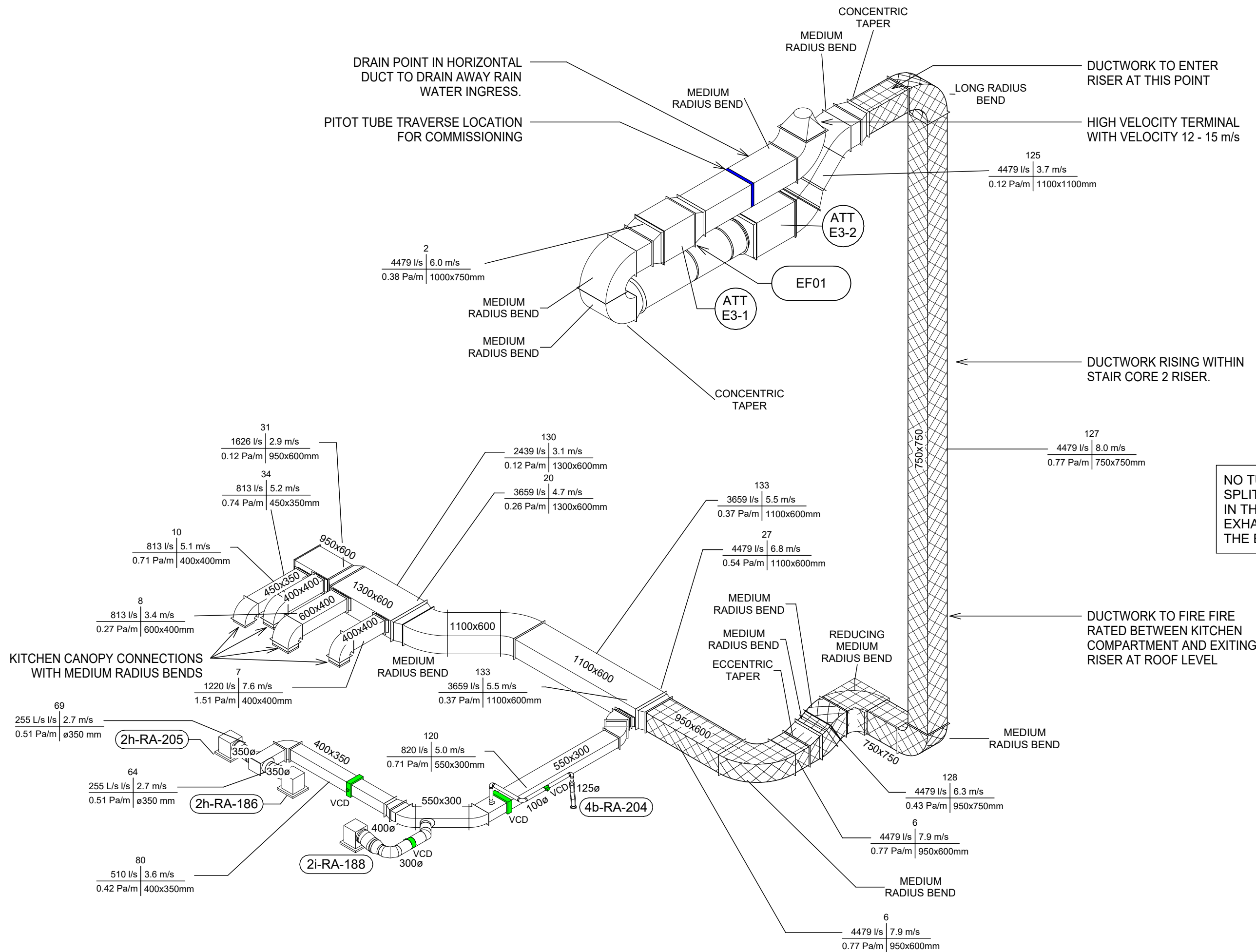
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GMI

PROJECT
DAKOTA HOTEL
ENTERPRISE WAY
MANCHESTER AIRPORT

DRAWING TITLE:
MECHANICAL SERVICES
KITCHEN SUPPLY VENTILATION SYSTEM
ISOMETRIC VIEW

CONTRACT No. C5895	SCALE at A2	DRAWN/CHECKED Checker	DATE JAN 2025
DRAWING NUMBER			
PROJECT L051	ORIGINATOR AFC	FUNCTION 57	TYPE 01
LEVEL ZZ	ROLE D	NUMBER M 570021	REVISION C01



NOTE

1. STATIC PRESSURE READINGS TO BE PROVIDED AS PART OF THE COMMISSIONING PROCESS ON THE AHU INTAKE, EXHAUST, SUPPLY & EXTRACT AFTER THE ATTENUATION.
2. STATIC PRESSURE READINGS TO BE PROVIDED AS PART OF THE COMMISSIONING PROCESS ON THE INDEX TERMINAL OF EACH MAJOR BRANCH.
3. THE POWER CONSUMPTION OF THE INDIVIDUAL FANS SHALL BE RECORDED ON THE COMPLETION OF THE COMMISSIONING PROCESS.

C01	29.07.25	APG	CONSTRUCTION ISSUE
P03	17.06.25	APG	DESIGN DEVELOPMENT TO THE BAR, DINNING & KITCHEN
P02	16.05.25	APG	ISSUED FOR INFORMATION / APPROVAL
P01	04.02.25	APG	ISSUED FOR INFORMATION / APPROVAL
REV	DATE	BY	DESCRIPTION

DRAWING STATUS:

CONSTRUCTION

A. F. CONNELL LTD

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INDUSTRIAL & COMMERCIAL BUILDING SERVICES ENGINEERS
1 ALFRED STREET. WEST VALE, HALIFAX, WEST YORKSHIRE,
HX4 8LT. TEL: 01422 310400
email: electrical@afconnell.com, mechanical@afconnell.com



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PROJECT

DAKOTA HOTEL
ENTERPRISE WAY
MANCHESTER AIRPORT

DRAWING TITLE:

MECHANICAL SERVICES
KITCHEN EXTRACT VENTILATION SYSTEM
ISOMETRIC VIEW

CONTRACT No.	SCALE at A3	DRAWN/CHECKED	DATE
C5895		APG	JNA 2025

DRAWING NUMBER								REVISION
PROJECT	ORIGINATOR	FUNCTION	VOLUME	LEVEL	TYPE	ROLE	NUMBER	
L051	AFC	57	01	ZZ	D	M	570022	C01