SCOPE OF WORK

SUMMARY

This document sets forth the scope of work for repairs to the existing HVAC system at the Qatar Pavilion. Requirements include adherence to work practices and procedures set forth in applicable codes, regulations and standards. Requirements include obtaining licenses, permits, inspections, releases and similar documentation, as well as payments, statements and similar requirements associated with codes, regulations, and standards.

The project completion date is 120 days from the Notice to Proceed.

A. Furnish all labor, tools, materials, fixtures, equipment, accessories, transportation, etc., required for the scope of work as identified complete with necessary auxiliaries as and as hereinafter specified.

B. In general, the work shall consist of the following installations: (see below and Appendix for more information on scopes of work)

1. Provide control isolation dampers in the supply ducts for AHU 6A and 6B. The air units are set up for 100% redundancy. One unit is the lead unit and the second unit is the standby unit. The dampers are required to allow the air units to use a common duct system.
2. Provide check valves at the discharge of the (2) existing main chilled water pumps and (2) existing main heating water pumps. The pump piping is 8" for chilled water and 6" for heating water. The existing pumps are inline style. Rework the existing piping as required for the installation of the new check valves.
3. Provide test and balance for all major air handling units, pumps and exhaust fans. See test and balance section below.
4. Replace existing Atrium louvers with new hurricane rated wind driven rain resistant louvers. See louver section below.
5. Replace existing heat recovery coils for AHU 6A and 6B (one common coil), AHU 5, AHU 4, and AHU 3. Provide new filter racks for each coil location. Modify ducts as required for installation of filter rack. See below.
6. Replace AHU-3, AHU-4, AHU-5, AHU-6A and AHU-6B. Disconnect chilled and heating water piping, electrical and ductwork. Reconnect chilled and heating water piping, electrical and ductwork. Provide new condensate drain with running trap. **Note: The air units will be Owner furnished and Contractor installed. The Contractor will be responsible for coordinating air unit delivery to the site, rigging prep and rigging, as well as the complete installation of the air units.**
7. Stiffen outside air duct serving AHU-6A. Existing duct has collapsed.
8. Replace heat wheels for AHU-1 and AHU-2.
9. Provide access panels for existing heat recovery coils on exhaust side (4 locations).
10. Provide building pressurization sensors and programming.
11. Provide point by point control system retro-commissioning.

C. Prior to submitting quotation for work, Contractor shall visit and examine the job site in order to become familiar with all existing conditions pertinent to the work to be performed thereon. No additional compensation will be allowed for failure to be so informed.

D. It is the intent of these specifications that in all particulars, the materials and workmanship shall conform to the best practice and that the equipment and accessories as furnished and installed shall be complete and ready to operate.

E. All materials shall be new, except where otherwise indicated, and shall conform to the standards of underwriters' Laboratories in every case where such a standard has been established for the particular type of material in question.

CODES AND REGULATIONS

General Applicability of Codes and Regulations, and Standards: Except to the extent that more explicit or more stringent requirements are written directly into the contract documents, all applicable codes, regulations, and standards have the same force and effect (and are made a part of the contract documents by reference) as if copied directly into the contract documents, or as if published copies are bound herewith.

Contractor Responsibility: The Contractor shall assume full responsibility and liability for the compliance with all applicable Federal, State, and local regulations pertaining to work practices, hauling, disposal, and protection of workers, visitors to the site, and persons occupying areas adjacent to the site. The Contractor shall hold the Owner and Designer harmless for failure to comply with any applicable work, hauling, disposal, safety, health or other regulation on the part of himself, his employees, or his subcontractors.

Electrical work shall comply with National Electrical Code. Minimum conduit size shall be ½" or larger as required. Minimum wire size shall be #12 AWG or as required. All exterior conduit, boxes, fittings, enclosures, etc. shall be galvanized, weatherproof as required by Code. Interior conduit shall be EMT with compression fittings. Grounding shall be in accordance with NEC Article 250. All control wiring in mechanical rooms shall be in conduit. Control wiring above ceilings may be run using plenum rated wiring. Provide power from existing 120V circuits as required for new controls.

SUBMITTALS

Prior to start of work; submit the following to the Designer for review:

Dampers
Test and balance
Check valves
Heat recovery coils
Control system
Retro-Commissioning plan

No work shall begin until these submittals are returned with Designer's action indicating that the submittal is returned for unrestricted use or final-but-restricted use.

Licenses and Certificates: For the Owner's records, submit copies of permits, licenses, certifications, inspection reports, releases, receipts for fee payments, correspondence and records established in conjunction with compliance with standards and regulations bearing upon performance of the Work including:

- State Regulations: Submit copies of codes and regulations applicable to the work.
- Permits: Apply for and pay for all state and local permit fees.
- Licenses: Submit copies of all State and local licenses and permits necessary to carry out the work of

this contract.

CUTTING AND PATCHING

A. Employ skilled tradesmen to perform cutting and patching. Except as otherwise indicated or approved by the Engineer, proceed with cutting-and-patching at the earliest feasible time, in each instance, and perform the work promptly.

B. Cut work by methods least likely to damage work to be retained and work adjoining.

C. Patch with seams that are durable and as invisible as possible. Comply with specified tolerances for the work.

D. Restore exposed finishes of patched areas; and, where necessary extend finish restoration onto retained work adjoining, in a manner which will eliminate evidence of patching.

E. Where patch occurs in a smooth painted surface, extend final paint coat over the entire unbroken surface containing the patch, after patched area has received prime and base coats.

F. Penetrations through exterior walls shall be neatly cored, provided with a suitable sleeve, caulked and waterproofed.

PROTECTION OF MATERIAL AND EQUIPMENT

A. Contractor shall continuously maintain adequate protection of all his work from damage and shall protect the Owner's property from injury or loss, except as may be caused by agents or employees of the Owner.

B. Conduit openings shall be capped or plugged during installation. Equipment shall be tightly covered and protected against dirt, moisture, chemical and mechanical injury. At the completion of the work, material and equipment shall be thoroughly cleaned and delivered in condition satisfactory to the Engineer.

CLEANING UP

A. This Contractor shall promptly remove from the jobsite all debris, surplus and waste materials, empty crates and cartons resulting from his work.

B. This Contractor shall remove all oil, grease or other stains resulting from his work performed in the building or the exterior thereof.

GUARANTEE

A. Upon completion of all tests and acceptance, the Contractor shall furnish the Owner a written guarantee covering all electrical work under this Contract for a period of one (1) year from date of final acceptance. Upon notice from the Owner or the Consulting Engineer during the Guarantee period, the Contractor shall replace defective materials and correct faults of workmanship and repair any damage caused thereby promptly and free of any charge.

COMMISSIONING

A. Contractor shall install all items of equipment as identified in this specification in strict accordance with manufacturer's requirements (whether identified in this specification or not), shop drawings and contract documents. Contractor shall coordinate with the Owner to ensure that Owner provided utilities are provided in accordance with manufacturer's requirements. Start-up of all equipment shall be by manufacturer authorized representative. Start-up services shall be provided for as long a period of time as is necessary to insure proper operation of the equipment items. The start-up technician shall conduct all operating tests as required to ensure the equipment is operating in accordance with design parameters. Complete testing of all safety and emergency control devices shall be made. The start-up technician shall submit a written report to the engineer (prior to final punch list inspection) containing all test data recorded as required above and a letter certifying that the equipment is operating properly.

DEMOLITION

Remove existing heat recovery coils and louvers as indicated above. Remove any piping, ductwork, etc. as required to perform work. Dispose of in a legal manner.

LOUVERS

The existing Atrium louvers shall be removed and replaced with new hurricane rated wind driven rain resistant louvers. The louvers shall be 4" frame depth, 6063T6 extruded aluminum, double drainable blades, Miami Dade county approved with bird screen, Ruskin EME420MD or approved equal. The louvers shall have a Kynar finish to match existing louver color. Verify the exact color, number of louvers and installation on site. The louvers that are not connected to the smoke exhaust fans shall have the backs sealed with sheet metal and insulated with 1" sheet Armaflex glued to the back of the sheet metal.

PIPING

- Disconnect and reconnect piping for heat recovery coils that are being replaced.
- New check valves shall be provided for heating water (2-6") and chilled water (2-8") inline pumps. Check valve shall be cast iron, Class 125, 350-degree F rated, full port, NIBCO F-918-B or approved equal. Modify existing piping as required for installation of the four check valves. Repair the insulation as required.
- Disconnect and reconnect piping for air units being replaced (AHU-3, 4, 5, 6A and 6B).

  Note: 2-way control valves shall be used for the heating and cooling coils.

  The coil piping arrangement shall be as follows (provide reducers as required):

  Supply – ball valve, T&P, strainer, T&P, union, coil
  Return – ball valve, globe balancing valve, T&P, 2-way control valve, T&P, union, coil

  BALL VALVES

  Provide ball valves for chilled and heating water coils at supply and return for air unit.

  Flanged Ends 2-1/2" and larger: Class 150, flanged ends, carbon steel body with 316 s.s. trim, uni-body design, full port, blowout proof s.s. stem and ball, telfon seat.

Threaded Ends 3" and Smaller: 600# W.O.G., forged brass two-piece body, hard chrome plated forged brass ball, blow-out proof stem.

STRAINERS

Through 2-1/2" Metraflex Style S - Screwed; Zurn Model YSBR 20 mesh monel screen through 2"; .045 stainless steel on 2-1/2"; Strainers on 3" and above Metraflex Style M1 - flanged; Zurn Model FS 3" to have .045 mesh, ss screws; 3-1/2" and above .125 mesh, ss screws.

BALANCING VALVES

Valves ½" to 2" pipe size (NPT or Sweat) to be of dezincification brass or bronze construction. Valves 2-1/2" to 12" pipe size shall be cast iron for flanged models or ductile iron for grooved models. Valves shall be globe type rated 175 psi for iron and 240 psi for brass/bronze at 250 degrees F. Valves to have concealed memory stop feature and visual position readout. Each valve shall have two metering/test ports with internal check valves and protective caps. Valves to be leak-tight at full rated working pressure. All valves to be provided with molded insulation to permit access for balance and read-out. Nibco model T or S1710 (1/2" to 2"), F or G737 (2-1/2" to 12"), DeZurik series 12.30-1 or approved equal.

T.A.P. PLUGS

Furnish where shown on plans or where good practice requires 1/2" IPS plug. The Contractor shall leave with the Owner one kit consisting of (1) 1/8" thermometer, (1) pressure gauge and (1) gauge adaptor, 1/8" diameter with stainless steel probe, 1/4" FPT gauge connection.

Provide automatic air vents at each high point and drain valves at each low point in the new piping.

ELECTRICAL

Comply with NEC requirements. Remove wiring to existing pumps and air units being replaced as required for replacement. Provide junction box and cap wiring temporarily for reuse. Connect existing wiring to new pumps and air units. Provide liquid tight flexible conduit for last 3' before connection to motor junction box.

TEMPERATURE CONTROLS

Provide retro-commissioning of all temperature control system points. Siemens is the existing campus control contractor. Coordinate work with Siemens. The following shall be performed:

- Review existing systems and related documentation.
- Perform calibration and maintenance checks for all sensors, dampers, actuators, controllers, etc.
- Perform functional test of all controls.
- Analyze and review test data.
- Provide a complete list of devices, sequences, etc. that need to be addressed with estimated cost of repairs. The calibration of all devices shall be in this project cost.

New heat wheels, pumps, heat recovery coils, and air handling units shall be controlled by the existing sequence of operation. Provide new chilled and heating water control valves for AHU-3, 4, 5, 6A and 6B. Verify on site.

Provide building pressurization control strategy. Provide building pressure sensors on each floor and an outside reference sensor. The sensor shall measure the differential pressure between the outside and inside of the building. The control system shall modulate the outside air dampers and exhaust fans in the air handling units as required to maintain positive building pressure of 0.03 in (adj). Develop suitable strategy after retro-commissioning of controls is completed.

DUCTWORK

A. Provide and install ductwork as herein specified to include:

- Modification to existing return air ducts as required for new installation of filter racks before heat recovery coils on AHU-3, AHU-4, and AHU-5.
- New outside air duct with filter rack from louver to heat recovery coil on AHU-6A, 6B. The new duct shall be full width of the heat recovery coil from the louver to the heat recovery coil.
- Modify existing ductwork as required for new isolation dampers in the outside air supply from AHU-6A and AHU-6B.
- Install new louvers and reconnect to existing smoke exhaust ductwork.
- Repair outside air duct serving AHU-6A. The duct has partially collapsed. Install stiffeners as required.
- Provide access panels in the exhaust air duct before the existing heat recovery coils. (4 locations)
- Disconnect and reconnect supply and return ductwork for air handling units 3, 4, 5, 6A and 6B.

B. Ductwork shall be as described in the latest edition of SMACNA manuals and as per the following:

1. Galvanized sheet metal shall be lock form quality per ASTM A653 with a G90 zinc coating.

2. Outside air ducts shall be galvanized sheet metal with air-tight seams and as per applicable sections of SMACNA manuals for low velocity ducts. Insulate outside air and exhaust air ducts with external wrap.

3. Supply and return ducts for low pressure system and, low velocity systems shall be galvanized sheet metal with airtight seams and as per applicable section of SMACNA manuals for low velocity ducts. All ducts shall be insulated with 2" exterior wrap. Internally line the first 5’ of supply and return for sound attenuation.

6. All ducts shall be sealed per SMACNA Seal Class A. All joints, longitudinal seams and wall penetrations of all supply, return and outside air ducts shall be sealed with an elastomeric tape which shall consist of a pressure sensitive layer of modified butyl rubber sealer laminated to a foil backing material which shall conform to surface variations and irregular areas and shall not harden crack or peel. The sealant shall be waterproof and shall be a minimum of 15 mils thick. All ductwork shall be cleaned and prepared and sealant shall be applied strictly in accordance with manufacturer's instructions and recommendations. Sealant shall be Hardcast FG-1402, Suretape #653 or approved equal,

at Contractor's option flanged gasketed duct system may be used for POSITIVE PRESSURE SYSTEM ONLY.

C. Duct supports for rectangular ducts shall be a minimum 1" X 18-gauge galvanized steel bands. Hanger bands shall be bent under lower corners and secured with self-tapping screws at corners and six (6") inch intervals up the sides. Distance between hangers shall be as recommended by SMACNA manual for low and medium ductwork. Ductwork shall be rigidly supported to prevent vibration. Duct attachments to structure, lower hanger attachments, ducts traps and rods and trapeze angles shall be in accordance with SMACNA Low Pressure and High Pressure Duct Standards.

   Maximum duct leakage shall be +/- 5%, SMACNA Seal Class A. Outside air, return air and exhaust air systems shall be designed for 2.5" static pressure. Construct ductwork in accordance with SMACNA Duct Construction Standards for the specified pressure class.

   Install Automatic dampers, airflow stations and other duct mounted devices.

   Volume dampers shall be opposed blade type with 2" handle standoff for duct insulation.

D. Isolation dampers shall be installed in the outside air supply duct for AHU-6A and AHU-6B. The dampers shall be ultra-low leakage with control actuator, maximum leakage 3CFM/sqft @ 1" wg. Dampers shall be Ruskin model CD60 or approved equal. The dampers shall be controlled by the temperature control system.

E. Filter racks for heat recovery coils shall be 16-ga galvanized steel, side access, fully gasketed, flanged suitable for 2" pleated filters. Modify existing ductwork as required for installation of new filter racks. Provide MERV 8 filters. Filter rack shall match the width of the heat recovery coil.

F. Access panels shall be gasketed, double wall insulated, minimum size 12" x 12". Cut into existing ducts for access to exhaust heat recovery coils. Provide one on top and one on bottom of duct at each location (8 total access panels).

INSULATION

CHILLED WATER PIPING

Insulate chilled water piping, valves and fittings with 2" thick elastomeric closed cell foam pipe insulation. The R-value shall be 5.7 minimum.

HEATING WATER PIPING

A. Insulate heating water piping with glass fiber pipe insulation with factory applied white all service jacket, with self-sealing lap (ASJ-SSL).

B. Insulate fittings, flanges and valves with performed insulation with PVC premolded one-piece fitting covers, with fiberglass insert. Premolded or shop fabricated glass fiber cover may be used in lieu of above at the Contractor's option. Optional covers to be given a smoothing coat of finishing cement in exposed areas and finished in all areas with Insulation Coating, reinforced with white glass fabric.

C. Insulation thickness to be as follows:

	PIPE SIZES		
	Up to 2”	2-1/2 to 4”	Over 4”
Insulation Thickness	1”	1-1/2”	2”

D. Adhere longitudinal laps and butt strips of jacket with factory applied pressure sensitive tape system or stapled on 2-inch centers with monel staples.

AIR CONDITIONING DRAINS

A. Insulate **all** air conditioning condensate drains, fittings, flanges with flexible foamed plastic tubing insulation, J-M Aerotube 11, Rubatex, or approved equal. Thickness to be 3/4 inch.

DUCT INSULATION

A. Insulation shall be as per the following:

B. Lined Duct system - All lined ducts shall be lined with Knauf Duct Liner E-M, Manville Lina-Coustic duct liner, or approved equal. Duct Lining shall be applied in strict accordance with the latest edition of SMACNA's "HVAC Duct Construction Standard Metal & Flexible." Mechanical fasteners shall meet "Standards for Mechanical Fasteners MF-1-1975." Length of mechanical fasteners shall not compress the insulation more than 1/8" and shall be installed perpendicular to the duct surface. Adhesive shall conform to ASTM C 916 and be applied to the sheet metal with a 90% minimum coverage. All exposed edges of the duct liner material shall be coated with the same adhesive. All rips and tears shall also be repaired using adhesive. All internal duct areas shall be covered with duct liner. Transverse joints shall be firmly butted with no gaps and coated with adhesive. Longitudinal corner joints shall be overlapped and compressed. For velocities from 4001 to 6000 FPM, metal nosing shall be applied to all upstream transverse edges to additionally secure the insulation." Liner shall be 1” thick, I.5 PCF.

C. Exterior Duct Wrap - Exterior insulation duct wrap shall be 2” thick .75 PCF fiberglass wrap with F.S.K. jacket.

AHU-3, 4, 5, 6A & 6B REPLACEMANT

1. Removal of existing air units.
2. **The air units will be Owner furnished and Contractor installed. The Contractor will be responsible for coordinating air unit delivery to the site, rigging prep and rigging, as well as the complete installation of the air units.**
3. Install new air units in the existing locations per the schedule in the Appendix. The air units shall be connected to the existing duct systems.
4. Provide chilled water, heating water, electrical, drains, and controls as required to make the air unit operational. Verify piping hand and locations on site.
5. Modify existing piping (drains, hydronic, etc.) as required for new air unit piping configuration.

6. Provide new valves as specified for the new air unit. Connection to existing piping shall occur upstream of existing valves so that there no existing isolation valves are reused at the air unit.
7. Provide new 480V, 3 phase circuits from existing air unit power junction box.
8. Existing temperature control sequence of operation shall be reused.
9. Provide new 20 GA 304SS drain pan under air unit. Pipe drain pan to existing condensate drain. Provide float switch in drain pan with alarm point on control system.
10. Reinsulate/repair insulation as required.

HEAT RECOVERY WHEELS

Replace existing heat wheels for AHU-1 and AHU-2. See schedule in Appendix.

HEAT RECOVERY COILS

Provide new heat recovery coils for AHU 6A and 6B (one common coil), AHU 5, AHU 4, and AHU 3. Disconnect and reconnect existing piping, modify as required. See coil schedule in Appendix.

TEST AND BALANCE

Test and balance air and waterflow for the following: (See existing mechanical schedules in the Appendix)

- AHU-1
- AHU-2
- AHU-3
- AHU-4
- AHU-5
- AHU-6A & 6B
- PM-1,2
- PM-3,4
- PM-9,10
- PM-11
- PM-12
- EF6-1,2
- EF6-3,4
- EF6-5,6
- EF6-7
- EF6-8
- EF6-9

Provide complete test and balance report as follows.

AIR SYSTEMS PROCEDURE (MINIMUM REQUIREMENTS)

A. Test and adjust fan RPM to design requirements.

B. Test and record motor full load nameplate rating and actual ampere draw.

C. Test and record system static pressures, fan suction and discharge.

D. Adjust all main supply and return air duct to proper design CFM.

E. Test and adjust each diffuser, grille and register (new and existing as indicated on drawings). Reading and tests of diffusers, grilles and registers shall include design velocity (FPM) and as adjusted velocity, design CFM and adjusted CFM.

F. Test and record outside, mixed air and discharge temperatures (D.B. for heating cycle, D.B. and W.B. for cooling cycle).

G. In coordination with the ATC contractor, set adjustments of automatically operated dampers to operate as specified, indicated and/or noted.

H. Test and adjust air handling and distribution systems to provide required or design supply, return, outside and exhaust air quantities.

I. Make air quantity measurements in ducts by Pitot tube traverse of entire cross-sectional area of duct.

J. Measure air quantities at air inlets and outlets.

K. Adjust distribution system to obtain uniform space temperatures free from objectionable drafts and noise.

L. Use volume control devices to regulate air quantities only to extend that adjustments do not create objectionable air motion or sound levels. Effect volume control by duct internal devices such as dampers and splitters.

M. Vary total system air quantities by adjustment of fan speeds. Provide drive changes required. Vary branch air quantities by damper regulation.

N. Provide system schematic with required and actual air quantities recorded at each outlet or inlet

O. Measure static air pressure conditions on air supply units, including filter and coil pressure drops, and total pressure across the fan. Make allowances for 50 percent loading of filters.

P. Adjust outside air automatic dampers, outside air, return air and exhaust dampers for design conditions.

Q. Measure temperature conditions across air, return air, and exhaust dampers to check leakage.

R. Where modulating dampers are provided, take measurement and balance at extreme conditions.

S. Measure and record pressure differentials between designated spaces.

WATER SYSTEM PROCEDURE (MINIMUM REQUIREMENTS)

A. Prepare itemized equipment schedules, listing all heating and/or cooling elements and equipment in the systems to be balanced. List in order on equipment schedules, by pump or zone according to the design, all heating or cooling elements all zone balancing valves circuit pump and ending with the last items of equipment or transfer element in the respective zone or circuit. Include on schedule sheet column titles listing the location, type of element or apparatus, design conditions and measured conditions. Prepare individual pump report sheets for each zone or circuit.

B. Adjust water systems (new and existing as indicated on drawings) to provide required or design quantities.

C. Use calibrated Venturi tubes, orifices, or other metered fitting and pressure gages to determine flow rates for system balance. Where flow-metering devices are not installed, base flow balance on temperature difference across various heat transfer elements in the system.

D. Adjust systems to provide specified pressure drops and flows through heat transfer elements prior to thermal testing. Perform balancing by measurement of temperature differential in conjunction with air balancing.

E. Effect system balance with automatic control valves fully open to heat transfer elements.

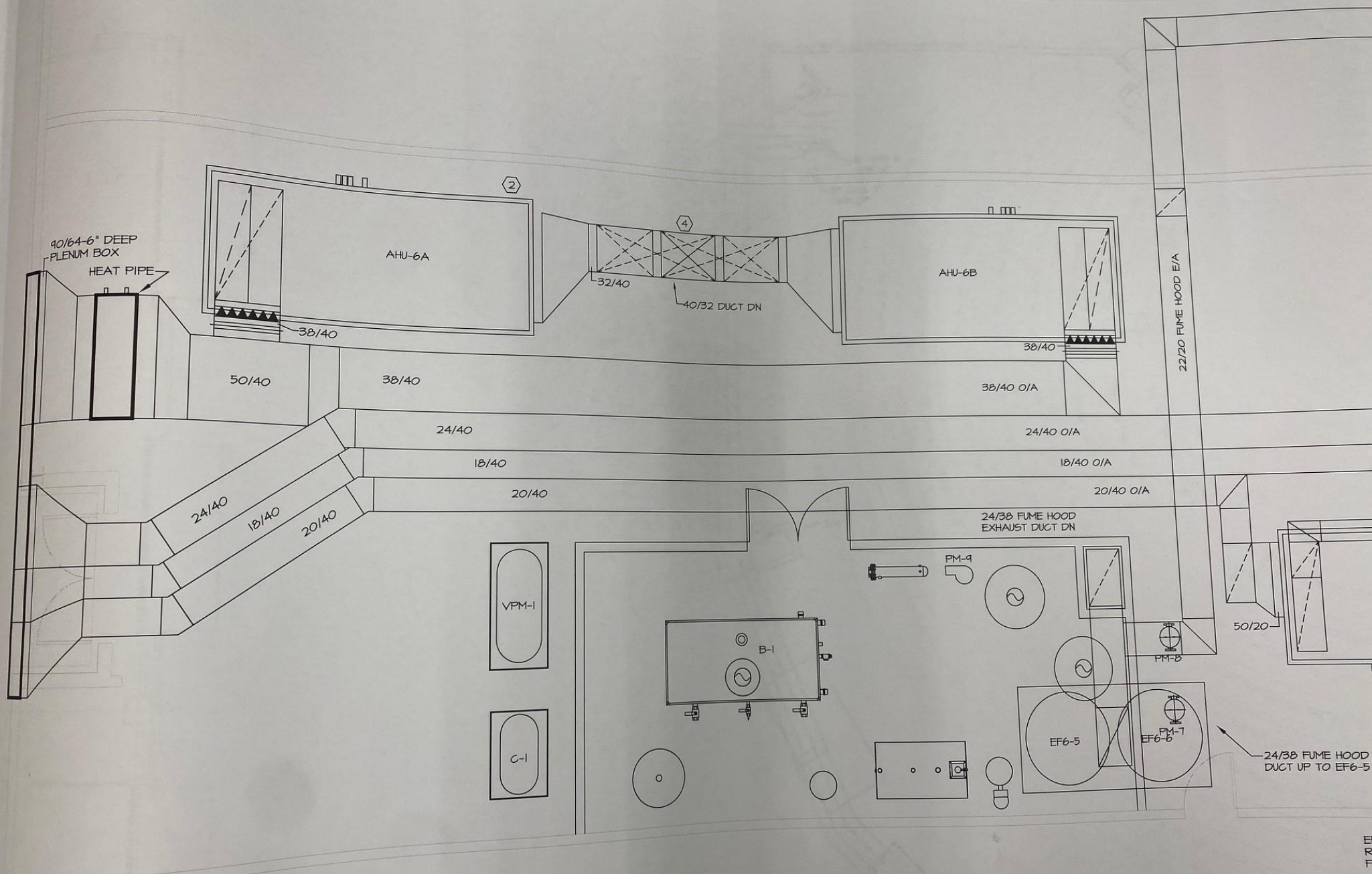
F. Effect adjustment of water distribution systems by means of balancing cocks, valves, and fittings. Do not use service or shut-off valves for balancing unless indexed for balance point.

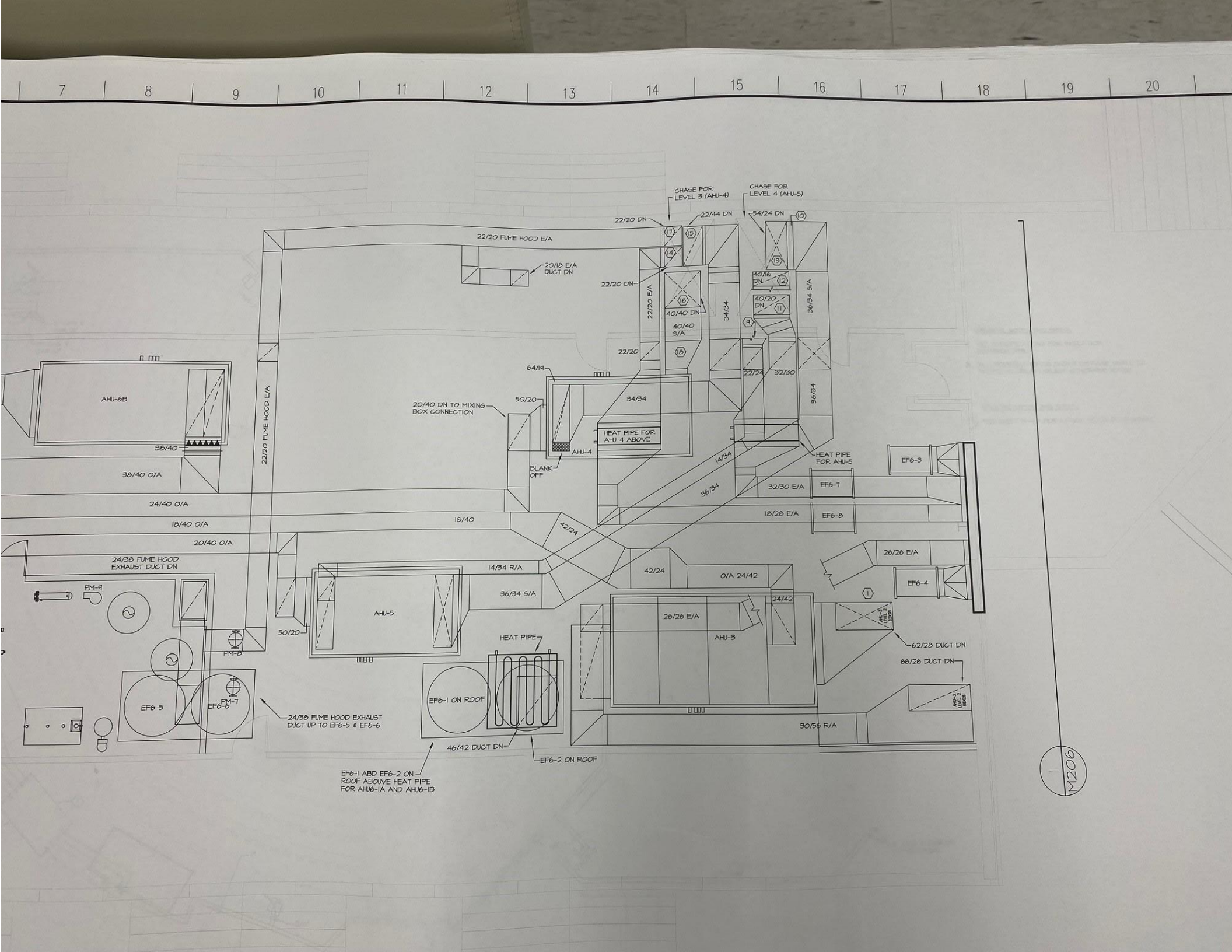
G. Test pumps and adjust flow. Record the following on pumps report sheets: (a) suction and discharge pressure, (b) running amps and brake horsepower of pump motor under full flow and no flow conditions, (c) pressure drop across pump in feet of water and total GMP pump is handling under full flow conditions.

H. Where available pump capacity is less than total flow requirements or individual system parts, full flow in one part may be simulated by temporary restriction of flow to other parts.

APPENDIX

1. Mechanical room layout picture.
2. Pictures showing isolation dampers.
3. Mechanical schedules for reference with test and balance and control scope of work.
4. Pictures showing Atrium louver replacement work.
5. Heat recovery coil information.
6. Air handling unit 3, 4, 5, 6A, and 6B information. (Owner furnished, Contractor installed) Included for reference.
7. Picture showing collapsed outside air duct.
8. Heat wheel information.
9. Pictures showing heat recovery coils to be replaced and new filter rack locations.


90/64-6" DEEP
PLENUM BOX
HEAT PIPE
AHU-6A
2
4
32/40
40/32 DUCT DN
AHU-6B
38/40
38/40
50/40
38/40
38/40 O/A
24/40
24/40 O/A
18/40
18/40 O/A
20/40
20/40 O/A
22/20 FUME HOOD E/A
24/40
18/40
20/40
24/38 FUME HOOD
EXHAUST DUCT DN
PM-9
VPM-1
B-1
PM-8
50/20
C-1
EF6-5
PM-7
EF6-6
24/38 FUME HOOD
DUCT UP TO EF6-5


7
8
9
10
11
12
13
14
15
16
17
18
19
20
CHASE FOR LEVEL 3 (AHU-4)
CHASE FOR LEVEL 4 (AHU-5)
22/20 DN
22/44 DN
54/24 DN
22/20 FUME HOOD E/A
20/18 E/A DUCT DN
22/20 DN
22/20 E/A
34/34
40/16 DN
40/20 DN
40/40 DN
40/40 S/A
36/34 S/A
22/20
22/24
32/30
36/34
64/19
50/20
20/40 DN TO MIXING BOX CONNECTION
34/34
HEAT PIPE FOR AHU-4 ABOVE
AHU-4
BLANK OFF
HEAT PIPE FOR AHU-5
AHU-6B
38/40
38/40 O/A
22/20 FUME HOOD E/A
24/40 O/A
18/40 O/A
20/40 O/A
18/40
42/24
14/34
36/34
32/30 E/A
18/28 E/A
EF6-3
EF6-7
EF6-8
24/38 FUME HOOD EXHAUST DUCT DN
PM-9
14/34 R/A
36/34 S/A
AHU-5
50/20
42/24
0/A 24/42
24/42
26/26 E/A
AHU-3
26/26 E/A
EF6-4
62/28 DUCT DN
66/26 DUCT DN
HEAT PIPE
PM-8
EF6-5
EF6-6
PM-7
24/38 FUME HOOD EXHAUST DUCT UP TO EF6-5 & EF6-6
EF6-1 ON ROOF
30/56 R/A
46/42 DUCT DN
EF6-2 ON ROOF
EF6-1 ABD EF6-2 ON ROOF ABOUVE HEAT PIPE FOR AHU6-1A AND AHU6-1B
1
M206


Install isolation damper here
Install isolation damper here

AIR HANDLING UNIT SCHEDULE

MARK	EXT. S.P. IN W.G.	SUPPLY MOTOR DATA: S/A CFM	H.P.	VOLTS	PHASE	FAN RPM	PRE-HEAT COIL: ENT AIR °F DB	LVG AIR °F DB	GPM	ENT. WATER °F	WATER ΔT °F	AIR PD IN W.G.	WATER PD FT. H_2O	COOLING COIL: ENT AIR °F DB	WB	LVG AIR °F DB	WB	GPM	ENT. WATER °F	WATER ΔT °F	AIR PD IN W.G.	WATER PD FT. H_2O	HEAT PIPE PERFORMACE: COOLING MODE ENT AIR °F DB	WB	LVG AIR °F DB	WB	HEATING MODE ENT AIR °F DB	WB	LVG AIR °F DB	WB	E/A CFM	EXHAUST MOTOR DATA: H.P.	VOLTS	PHASE	FAN RPM	O/A CFM MAX	MIN	DESCRIPTION
AHU-1	1.25	5,535	7.5	460	3	1710	25	56.7	21.2	180	20	0.04	7.7	79.4	69.2	53.4	52.7	63.5	45	10	0.33	9.2	-	-	-	-	-	-	-	-	4,250	3	460	3	?	5,000	750	VAV CHILLED WATER AIR HANDLER WITH HEAT WHEEL, PLUG FAN AND MIXING BOX. HOT WATER COIL IN THE PRE-HEAT POSITION. AIR HANDLER SHALL BE MADE OF DOUBLE WALL CONSTRUCTION. PROVIDE VFD ON SUPPLY AIR MOTOR AND ON EXHAUST AIR MOTOR. YORK SOLUTION SERIES
AHU-2	1.25	6,610	10	460	3	1800	25	61.0	28.7	180	20	0.04	10.0	79.8	69.0	53.4	53.0	73.2	45	10	0.25	13.8	-	-	-	-	-	-	-	-	5,100	3	460	3	?	6,000	750	VAV CHILLED WATER AIR HANDLER WITH HEAT WHEEL, PLUG FAN AND MIXING BOX. HOT WATER COIL IN THE PRE-HEAT POSITION. AIR HANDLER SHALL BE MADE OF DOUBLE WALL CONSTRUCTION. PROVIDE VFD ON SUPPLY AIR MOTOR AND ON EXHAUST AIR MOTOR. YORK SOLUTION SERIES
AHU-3	2.5	21,200	30	460	3	1800	25	60.4	90.6	180	20	0.08	11.7	78.2	65.2	53.3	52.2	209	45	10	0.60	19.1	-	-	-	-	-	-	-	-	6,500	5	460	5	?	7,500	1,000	VAV CHILLED WATER AIR HANDLER WITH HEAT WHEEL, PLUG FAN AND MIXING BOX. HOT WATER COIL IN THE PRE-HEAT POSITION. AIR HANDLER SHALL BE MADE OF DOUBLE WALL CONSTRUCTION. PROVIDE VFD ON SUPPLY AIR MOTOR AND ON EXHAUST AIR MOTOR. YORK SOLUTION SERIES
AHU-4	2.0	14,365	20	460	3	1800	25	60.6	61.5	180	20	0.07	5.3	78.9	66.8	53.3	52.4	138.9	45	10	0.57	8.4	95.0	80.0	90.0	78.8	20	19	37.1	29.91	4,850	*	-	-	-	5,700	900	VAV CHILLED WATER AIR HANDLER WITH PLUG FAN AND MIXING BOX. HOT WATER COIL IN THE PRE-HEAT POSITION. AIR HANDLER SHALL BE MADE OF DOUBLE WALL CONSTRUCTION. PROVIDE VFD ON SUPPLY AIR MOTOR AND HAVE HEAT PIPE FACTORY INSTALLED. YORK SOLUTION SERIES HEAT PIPE TECHNOLOGY, INC.
AHU-5	2.0	13,855	20	460	3	1800	25	58.2	58.7	180	20	0.06	5.2	80.5	70.3	53.4	52.7	160	45	10	0.64	11.6	95.0	80.0	80.5	70.3	20	19	42.9	33.3	9,460	**	-	-	-	9,400	1,400	VAV CHILLED WATER AIR HANDLER WITH PLUG FAN AND MIXING BOX. HOT WATER COIL IN THE PRE-HEAT POSITION. AIR HANDLER SHALL BE MADE OF DOUBLE WALL CONSTRUCTION. PROVIDE VFD ON SUPPLY AIR MOTOR AND HAVE HEAT PIPE FACTORY INSTALLED. YORK SOLUTION SERIES HEAT PIPE TECHNOLOGY, INC.
AHU-6A AHU-6B	2.5	14,600	20	460	3	1800	25	61.0	58.3	180	20	0.07	5.1	84.9	71.5	55.0	53.9	243.8	45	10	0.72	19.4	95.0	80.0	84.9	71.5	20	19	44.0	35.0	18,250	***	-	-	-	14,600	-	VAV CHILLED WATER AIR HANDLER WITH PLUG TYPE FAN, HOT WATER COIL IN THE PRE-HEAT POSITION. PROVIDE 30" INLET AIR FILTER AND 95% DISCHARGE FILTER AIR HANDLER SHALL BE MADE OF DOUBLE WALL CONSTRUCTION. PROVIDE VFD ON SUPPLY AIR MOTOR. HEAT PIPE SHALL BE INSTALLED IN DUCTWORK IN FIELD. YORK SOLUTION SERIES HEAT PIPE TECHNOLOGY, INC.
FCU-1,2	0.4	790	1/5	120	1	?	70	90	1.7	180	20	0.03	2.4	78.5	65.3	53.3	52.2	7	45	10	0.2	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	CONSTANT VOLUME CHILLED WATER FAN COIL UNIT WITH FORWARD CURVED FAN AND PLENUM BOX ON BACK OF FAN COIL. PROVIDE FILTER RACK FOR PLENUM BOX. HOT WATER COIL IN THE RE-HEAT POSITION. YORK YPHYB

*SEE EXHAUST FAN SCEDULE (EF6-7)
**SEE EXHAUST FAN SCEDULE (EF6-8)
***TOTAL SYSTEM EXHAUST SEE EXHAUST FAN SCEDULE (EF6-1 & EF6-2)
****HEATING COIL IN THE RE-HEAT POSITION
HEATING COIL SHALL BE IN THE RE-HEAT POSITION

PACKAGED AIR COOLED CHILLER SCHEDULE

MARK	GPM	TONS	LVG.WATER °F	PRESS. DROP FT. H_2O	COND. AIR ENT. TEMP. °F	ELECTRICAL DATA: VOLTS	PH	MCA	MOP	DESCRIPTION
CH-1	246.8	121.5	45	11.5	95	460	3	255	300	PACKAGE AIR COOLED SCROLL CHILLER WITH CONVENIENCE OUTLET. YORK MODEL: YLAAG1205E

ENERGY RECOVERY WATER LOOP SCHEDULE

SUMMER CONDITIONS

SYSTEM	OUTSIDE AIR: CFM	APD in wc	EAT DB/WB	LAT DB/WB	GPM	EWT deg F	LWT deg F	WPD ft water	EXHAUST AIR: CFM	APD in wc	EAT deg F	LAT deg F	GPM	EWT deg F	LWT deg F	WPD ft water
AHU-3	7500	0.30	95/80	88.0/77.8	67.2	81.5	83.6	5.01	6500	.79"	74	82.6	67.2	83.6	81.7	13.15
AHU-4	5700	0.57	95/80	85.6/77.7	54.5	83.0	85.1	7.83	4850	.71"	74	83.8	54.5	85	83.1	3.37
AHU-5	9400	0.43	95/80	85.2/77.6	51.0	81.0	84.9	7.96	9400	.84"	74	83.3	51	84.9	81.1	11.79
AHU-6A & 6B	14600	0.71	95/80	82.6/76.9	88.8	80.4	84.8	10.58	18250	.75"	74	83.2	88.8	74	83.2	17.26

WINTER CONDITIONS

SYSTEM	OUTSIDE AIR: CFM	APD in wc	EAT deg F	LAT deg F	GPM	EWT deg F	LWT deg F	WPD ft water	EXHAUST AIR: CFM	APD in wc	EAT DB/WB deg F	LAT deg F	GPM	EWT deg F	LWT deg F	WPD ft water
AHU-3	7500	0.34	20	43.4	67.2	52.8	46.2	3.11	6500	1.03	74/62	51.0	67.2	46.2	52.6	4.97
AHU-4	5700	0.60	20	46.4	54.5	51.3	45.1	8.59	4850	0.89	74/62	51.9	51.7	46	51.3	3.55
AHU-5	9400	0.48	20	43.8	51.0	57.0	48.1	8.56	9400	1.02	74/62.8	52.7	52.6	48.1	56.8	12.72
AHU-6A & 6B	14600	0.79	20	50.3	88.8	57.8	45.5	11.17	18250	0.92	74/62.5	52.2	88.8	45.5	57.8	11.17

PLUMBING FIXTURE SCHEDULE

MARK	FIXTURE	WASTE	H.W.	C.W.	DESCRIPTION
P1	WC	4"	-	1"	WALL MOUNTED WATER CLOSET WITH FLUSH VALVE
P1A	WC	4"	-	1"	WALL MOUNTED WATER CLOSET WITH FLUSH VALVE. ADA COMPLIANT.
P2	LAV	1 1/2"	1/2"	1/2"	COUNTERTOP LAY-IN LAVATORY WITH FAUCET. ADA COMPLIANT.
P2A	LAV	1 1/2"	1/2"	1/2"	WALL HUNG LAVATORY WITH FAUCET. ADA COMPLIANT
P2B	LAV	1 1/2"	1/2"	1/2"	WALL HUNG HAND WASH. ADA COMPLIANT
P3	UR	2"	-	3/4"	WALL HUNG URINAL WITH FLUSH VALVE
P3A	UR	2"	-	3/4"	WALL HUNG URINAL WITH FLUSH VALVE. ADA COMPLIANT
P4	SINK	1 1/2"	1/2"	1/2"	S.S. SINGLE COMPARTMENT LAY-IN TYPE SINK
P4A	SINK	1 1/2"	1/2"	1/2"	S.S. SINGLE COMPARTMENT LAY-IN TYPE SINK
P4B	SINK	1 1/2"	1/2"	1/2"	S.S. DOUBLE COMPARTMENT LAY-IN TYPE SINK
P5	SS	3"	1/2"	1/2"	TERRAZZO MOP BASIN
P5A	SS	3"	1/2"	1/2"	SS DOUBLE COMPARTMENT SCULLERY SINK WITH WASHBOARDS
P6	DF	1 1/2"	-	1/2"	WALL HUNG ELECTRIC DRINKING FOUNTAIN
P6A	DF	1 1/2"	-	1/2"	DUAL LEVEL WALL HUNG ELECTRIC DRINKING FOUNTAIN
PT	SHOWER	2"	1/2"	1/2"	ADA SHOWER
HB	HOSE BIBB	-	-	1/2"	HOSE BIBB WITH VACUUM BREAKER FOR INDOOR USE
HB-1	HOSE BIBB	-	-	1/2"	HOSE BIBB WITH VACUUM BREAKER FOR OUTDOOR USE
HS	HOSE STATION	-	3/4"	3/4"	TEMPERED WATER HOSE STATION WITH THERMOSTATIC MIXING VALVE
TRD-1	TRENCH DRAIN	4"	-	-	TRENCH DRAIN WITH WALL MOUNTED FLUSH VALVE IN ACCESS PANEL.
FD	FLOOR DRAIN	3"	-	-	FLOOR DRAIN FOR BATHROOMS
FD-1	FLOOR DRAIN	4"	-	-	RECESSED FLOOR DRAIN FOR AHU CONDENSATE DRAIN
FD-2	FLOOR DRAIN	4"	-	-	SEALABLE FLOOR DRAIN FOR VIVARIUM ROOMS
TP	TRAP PRIMER	-	-	1/2"	TRAP PRIMER FOR FLOOR DRAIN P-TRAP EVAPORATION

EXHAUST FAN SCHEDULE

MARK	CFM	EXT. S.P.	MOTOR DATA: WATTS	VOLTS	PHASE	RPM	DESCRIPTION
EF1-1	560	0.25	350	115	1	1100	CEILING EXHAUST FAN WITH ALUMINUM CEILING GRILLE, SPEED CONTROL AND BACK DRAFT DAMPER. GREENHECK SP-A700
EF1-2,5,6 EF2-2,3,4	70	0.25	50	115	1	700	CEILING EXHAUST FAN WITH ALUMINUM CEILING GRILLE, SPEED CONTROL AND BACK DRAFT DAMPER. GREENHECK SP-B90
EF3-2 EF4-3	70	0.25	50	115	1	700	CEILING EXHAUST FAN WITH ALUMINUM CEILING GRILLE, SPEED CONTROL AND BACK DRAFT DAMPER. GREENHECK SP-B90
EF1-3	260	0.25	81	115	1	1050	CEILING EXHAUST FAN WITH ALUMINUM CEILING GRILLE, SPEED CONTROL AND BACK DRAFT DAMPER. GREENHECK SP-A290
EF1-4	100	0.25	80	115	1	950	CEILING EXHAUST FAN WITH ALUMINUM CEILING GRILLE, SPEED CONTROL AND BACK DRAFT DAMPER. GREENHECK SP-B110
EF1-7 EF2-5 EF5-1	140	0.25	124	115	1	1050	CEILING EXHAUST FAN WITH ALUMINUM CEILING GRILLE, SPEED CONTROL AND BACK DRAFT DAMPER. GREENHECK SP-B150
EF2-1 EF3-1,3 EF4-1,2	210	0.25	83	115	1	1000	CEILING EXHAUST FAN WITH ALUMINUM CEILING GRILLE, SPEED CONTROL AND BACK DRAFT DAMPER. GREENHECK SP-A250
EF6-1,2	18,250	1.50	20*	460	3	1770	FUME EXHAUST SYSTEM WITH BIFURCATED FAN HOUSING, VACUUM SHAFT SEAL, INTEGRAL AIR GUIDE VANES, GALVANEAL BYPASS DAMPER WITH CONTROLS, ISOLATION DAMPER, HI-PRO POLYESTER COATING, COATED STEEL ROOF CURB, NEMA 3R DISC. SWITCH & VFDS TO MATCH MOTORS. GREENHECK VEKTOR-VK-MD-21-395-LV-HPW
EF6-3,4**	7,900	0.1	1 1/2*	460	3	1725	VANE AXIAL BELT DRIVE FAN WITH SOUND TRAP, NEOPRENE HANGER ISOLATORS, AND DOUBLE WALL STEEL HOUSING. GREENHECK VABS-30FI1-1-1.5
EF6-5,6	6,225	1.50	7 1/2*	460	3	1770	FUME EXHAUST SYSTEM WITH BIFURCATED FAN HOUSING, VACUUM SHAFT SEAL, INTEGRAL AIR GUIDE VANES, GALVANEAL BYPASS DAMPER WITH CONTROLS, ISOLATION DAMPER, HI-PRO POLYESTER COATING, COATED STEEL ROOF CURB, NEMA 3R DISC. SWITCH & VFDS TO MATCH MOTORS. GREENHECK VEKTOR-VK-MD-20-45-LV-HPW
EF6-7**	4,850	0.75	1*	208	3	1725	VANE AXIAL BELT DRIVE FAN WITH SOUND TRAP, NEOPRENE HANGER ISOLATORS, DOUBLE WALL STEEL HOUSING, AND VFD TO MATCH MOTOR. GREENHECK VABS-24FI4-1-1
EF6-8**	9,460	0.75	2*	208	3	1725	VANE AXIAL BELT DRIVE FAN WITH SOUND TRAP, NEOPRENE HANGER ISOLATORS, DOUBLE WALL STEEL HOUSING, AND VFD TO MATCH MOTOR. GREENHECK VABS-36FI4-1-2
EF6-4	6,500	1.50	3*	460	3	1725	VANE AXIAL BELT DRIVE FAN WITH SOUND TRAP, NEOPRENE HANGER ISOLATORS, SOUND INSULATION CABINETS, DOUBLE WALL STEEL HOUSING, AND VFD TO MATCH MOTOR. GREENHECK VABS-24FI4-1-3
SEF-1,2,3,4	35K	0.1	15*	460	3	1725	MEDIUM PRESSURE DIRECT DRIVE AXIAL SMOKE EXHAUST FAN. GREENHECK AX-90-275-0624-AI5

*HORSE POWER
**FAN RPM SHALL BE LESS THAN 800

PUMP SCHEDULE

MARK	SERVICE	GPM	FT. HEAD H_2O	ELECTRICAL DATA: HP	VOLTS	PH.	RPM	DESCRIPTION
PM-1,2	CHILLED WATER	948.4**	45	15	460	3	1770	OPEN COUPLED, VERTICAL INLINE PUMP, PUMP EFFICIENCY SHALL BE GREATER THAN 75%, PROVIDE VFD TO MATCH MOTOR SIZE. ARMSTRONG 4380/B&G SERIES 80
PM-3,4	HEATING WATER	321.5	37	7.5	460	3	1750	OPEN COUPLED, VERTICAL INLINE PUMP, PUMP EFFICIENCY SHALL BE GREATER THAN 72%, PROVIDE VFD TO MATCH MOTOR SIZE. ARMSTRONG 4380/B&G SERIES 80
PM-5,6	CHILLED WATER (VIVARIUM BACK UP)	246.8	48.5	7.5	460	3	1750	OPEN COUPLED, VERTICAL INLINE PUMP TO OPERATE WITH VIVARIUM BACKUP CHILLER(H-1). ARMSTRONG 4380/B&G SERIES 80
PM-7,8	HEATING WATER (VIVARIUM BACK UP)	127	30	2	460	3	1750	OPEN COUPLED, VERTICAL INLINE PUMP TO OPERATE WITH VIVARIUM BACKUP HEAT EXHCHANGER (HX-1). PROVIDE WATCHER VFD. ARMSTRONG 4380/B&G SERIES 80
PM-9,10	ENERGY RECOVERY LOOP	88.8	38	2	208	3	1750	IN LINE CIRCULATING PUMP. REDUNDANT PUMPS TO FUNCTION WITH AHU-6A OR AHU-6B. B&G MODEL: 80-2 1/2x2 1/2x1
PM-11	ENERGY RECOVERY LOOP	54.5	17	3/4	208	1	1150	IN LINE CIRCULATING PUMP SHALL FUNCTION WITH AHU-4. B&G MODEL: 80-2x2x1
PM-12	ENERGY RECOVERY LOOP	51.0	27	1	208	1	1150	IN LINE CIRCULATING PUMP SHALL FUNCTION WITH AHU-5. B&G MODEL: 80-1 1/2x1 1/2x9 1/2
PM-13	HOT WATER CIRC.	20	15	270*	115	1	3300	IN LINE CIRCULATING PUMP. ALL BRONZE WITH AQUASTAT AND TIMER. B&G NRF-45
PM-14	ENERGY RECOVERY LOOP	67.2	25	1	208	1	1150	IN LINE CIRCULATING PUMP SHALL FUNCTION WITH AHU-3. B&G MODEL: 80-2x2x1 1/2B
DWBP-1	DOMESTIC WATER	150	139	(2)5	460	3	3500	DUPLEX DOMESTIC WATER BOOSTER PUMP WITH A 150 GALLON BLADDER AT 85 PSIG SYSTEM PRESSURE. CANARIS PS-150-60

*WATTS
**53 GPM OF CHILLED WATER IS USED FOR THE BULK STERILIZER

VACUUM PUMP SCHEDULE

MARK	SERVICE	RECEIVER GALLONS	CAP. @ 19" HGV (ACFM)	ULTIMATE VACUUM (HGV)	ELECTRICAL DATA: HP	VOLTS	PH.	RPM	DESCRIPTION
VPM-1	VACUUM PUMP	120	(2)18.3	29.6	(2)3	460	3	1750	LUBRICATED MEDICAL VACUUM PUMP WITH 120 GALLON HORIZONTAL STORAGE TANK. GLOBALVAC MODEL GRPD-10-N

AIR COMPRESSOR SCHEDULE

MARK	SERVICE	RECEIVER GALLONS	DEL. S.C.F.M. (MIN)	PSI	ELECTRICAL DATA: HP	VOLTS	PH.	RPM	DESCRIPTION
C-1	COMP. AIR	80	35	50	2(5)	460	3	650	OIL-LESS DUPLEX MEDICAL AIR COMPRESSOR WITH TANK MOUNTED CONTROL PANEL AND A HORIZONTAL 80 GALLON STORAGE TANK. MODEL HSMT0112-8

ELECTRIC UNIT HEATER SCHEDULE

MARK	LOCATION	MOTOR DATA: KW	GPM	VOLTS	PH	DESCRIPTION
EUH-1,2,3	1ST FLOOR MECH. & STOR. RMS	5.0	400	208	3	HORIZONTAL DELIVERY ELECTRIC UNIT HEATER WITH UNIT MOUNTED THERMOSTAT AND SINGLE POINT POWER. PROVIDE WALL MOUNTING BRACKET OR CEILING MOUNTING BRACKET FOR VERTICAL MOUNTING. RAY HALL F2F5102SN

PACKAGED FIRE PUMP SYSTEM SCHEDULE

MARK	FIRE PUMP: GPM	FI. PUMP HEAD	HP	VOLTS	PH.	RPM	JOCKEY PUMP: GPM	JO. PUMP HEAD	HP	VOLTS	PH.	PUMP* RPM	DESCRIPTION
FP-1	500	164	30	480	3	3500	500	120	2	480	3	-	PACKAGED FIRE PUMP SYSTEM MOUNTED ON COMMON BASE PLATE. PROVIDE FIRE PUMP, ELECTRIC DRIVER, CONTROLLER, JOCKEY PUMP, AND JOCKEY PUMP CONTROLLER. AURORA 383

*VERIFY JOCKEY PUMP SPECIFICATIONS AND PERFORMANCE WITH INSTALLED SPRINKLER SYSTEM.

CANOPY HOOD SCHEDULE

MARK	LENGTH	WIDTH	HEIGHT	DUCT CONNECTIONS: EXHAUST AIR QUANTITY CFM	SP ("w.c.)	SWITCHES: QUANTITY WIDTH	LENGTH	LIGHT	DAMPER	LOCATIONS	LIGHTS: QUANTITY	TYPE	DESCRIPTION
HOOD-1 HOOD-2 HOOD-5	62"	36"	24"	1180 1180 750	0.17	12"	12"	1	1	TBD BY OWNER	2	INCAND. 30 FTGD	TYPE II, SINGLE BAFLE CONDENSATE EXHAUST ONLY CANOPY FOR VAV USE. 18 GA 55304 STANDING SEAM CONSTRUCTION WITH A #4 KOOL LINE FINISH. ALL SEAMS SHALL BE WELDED AND/OR LIQUID TIGHT. BAFFLE SHALL BE PITCHED TO DRAIN INTO A FULL PERIMETER, WELDED, CONDENSATE GOLLECTING GUTTER. GREENHECK: SD2
HD-3	92"	44"	24"	(2)500	0.17	(2)12"	(2)12"	1	2	TBD BY OWNER	2	INCAND. 30 FTGD	TYPE II, SINGLE BAFLE CONDENSATE EXHAUST ONLY CANOPY FOR VAV USE. 18 GA 55304 STANDING SEAM CONSTRUCTION WITH A #4 KOOL LINE FINISH. ALL SEAMS SHALL BE WELDED AND/OR LIQUID TIGHT. BAFFLE SHALL BE PITCHED TO DRAIN INTO A FULL PERIMETER, WELDED, CONDENSATE GOLLECTING GUTTER. GREENHECK: SD2
HD-4	130"	36"	24"	590	0.17	12"	12"	1	2	TBD BY OWNER	2	INCAND. 30 FTGD	TYPE II, SINGLE BAFLE CONDENSATE EXHAUST ONLY CANOPY FOR VAV USE. 18 GA 55304 STANDING SEAM CONSTRUCTION WITH A #4 KOOL LINE FINISH. ALL SEAMS SHALL BE WELDED AND/OR LIQUID TIGHT. BAFFLE SHALL BE PITCHED TO DRAIN INTO A FULL PERIMETER, WELDED, CONDENSATE GOLLECTING GUTTER. GREENHECK: SD2

HEAT EXCHANGER SCHEDULE

MARK	LOCATION	TUBE SIDE: GPM	T IN°F	T OUT°F	H20 PD (FT HD)	SHELL SIDE: STEAM PRES. (PSI)	STEAM FLOW (LB/HR)	INLET TEMP (°F)	DESCRIPTION
HX-1	BOILER RM PENTHOUSE	127	160	180	0.7	50	1361	298	SHELL & TUBE, U-BEND REMOVABLE TUBE BUNDLE HEAT EXCHANGER. B & G MODEL SU 818-2

SYSTEM TRAP SCHEDULE

MARK	INLET PRESS PSI	OUTLET PRESS PSI	CAPACITY LB/HR	DESCRIPTION
F & T #1	50	15	150	FLOAT AND THERMOSTATIC TRAP FOR END OF MAIN USE
F & T #2	50	15	1361	FLOAT AND THERMOSTATIC TRAP FOR EQUIPMENT CONTROL USE
F & T #3	125	15	220	FLOAT AND THERMOSTATIC TRAP FOR EMERGENCY MAIN USE
F & T #4	50	15	150	FLOAT AND THERMOSTATIC TRAP FOR EQUIPMENT CONTROL AND END OF SUPPLY USE

GAS FIRED STEAM BOILER SCHEDULE

MARK	MBTUH INPUT	MBTUH OUTPUT	DESIGN PRESS. RATING	LBS/HR OUTPUT	SYSTEM OPERATING PRESS. PSI	BHP	FLUE DIA IN	GAS CONN. IN	DESCRIPTION
B-1	4,500	3,600	150	3,110	125	108	24	2	FLEX TUBE STEAM BOILER ATMOSPHERIC BURNER BRYAN K-450

NOTE: BOILER SHALL BE INSTALLED PER REQUIREMENTS OR LOUISIANA BOILER INSPECTION LAW.

DIFFUSER GRILLE & REGISTER SCHEDULE

MARK	DESCRIPTION
D	SUPPLY AIR CEILING DIFFUSER, ALL ALUMINUM CONSTRUCTION, SQUARE PLAQUE DIFFUSER, ROUND NECK, 24x24 CEILING MODULE, LAY IN TYPE, BAKED OFF WHITE FINISH, NUMBER ON DRAWINGS DENOTES AIR PATTERN. NECK SIZE NOTED ON DRAWINGS. PRICE MODEL ASPD
D1	SAME AS MARK D EXCEPT PROVIDE PLASTER FRAME FOR SURFACE MOUNTING PRICE MODEL ASPD WITH FRAME MODEL AMF
D2	SAME AS MARK D EXCEPT THE MODULE SHALL BE A 12"x12" AND COME WITH A PLASTER FRAME FOR SURFACE MOUNTING. PRICE MODEL ASPD WITH FRAME MODEL AMF
LD	LINEAR BAR GRILLE. EXTRA HEAVY DUTY MANDREL CONSTRUCTION. HEAVY DUTY EXTRUDED ALUMINUM BORDER WITH REINFORCING SUPPORT BARS. 1/2" WIDE BAR SPACING AND 0° DEFLECTION. PROVIDE 6" INSULATED PLENUM BOX ON BACK OF GRILLE. 36"X6" MODULE SIZE. PRICE MODEL LBMH -15B
R	RETURN AIR GRILLE 1/2"x1/2"x1/2" EGG CRATE CORE FOR INSTALLATION IN T-BAR CEILING, ALUMINUM CONSTRUCTION BAKED WHITE ENAMEL FINISH 24x24 MODULE. PRICE MODEL 80
R1	SAME AS MARK R EXCEPT CONTRACTOR SHALL PROVIDE PLASTER FRAME FOR SURFACE MOUNTING.
R2	SAME AS MARK R EXCEPT THE MODULE SHALL BE 12"x12" AND THE CONTRACTOR SHALL PROVIDE A PLASTER FRAME FOR SURFACE MOUNTING.
R3	SAME AS MARK R EXCEPT THE MODULE SHALL BE 14"x14" AND THE CONTRACTOR SHALL PROVIDE A PLASTER FRAME FOR SURFACE MOUNTING.
R4	SAME AS MARK R EXCEPT THE MODULE SHALL BE 24"x48".
TD	PROVIDE SELF MODULATING DIFFUSER WITH WALL MOUNTED THERMOSTAT FOR VAV COOLING AND VAV HEATING. PROVIDE NECESSARY HARDWARE FOR MOUNTING. PROVIDE CONTROL WIRING AND TRANSFORMER. PRICE PDD2
L	6" DEEP EXTRUDED MIAMI-DADE COUNTY APPROVED ALL ALUMINUM LOUVER WITH DRAINABLE BLADES, SLEEVED BOX FRAME CONSTRUCTION, CONTROL DAMPER INSECT SCREEN, AND KYNAR FINISH. COLOR TO BE DETERMINED BY ARCHITECT. SIZE NOTED ON DRAWINGS. RUSKIN ELF375DXH
GHG	1/4" GALVANIZED HARDWARE CLOTH TO BE USED FOR ELECTRICAL SPACES. COVER END OF DUCT FULL SIZE AND SECURE.

MECHANICAL LEGEND

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
—— - ——	COLD WATER	O/A	OUTSIDE AIR
—— - ——	HOT WATER	RA	RETURN AIR
—— - ——	HOT WATER CIRCULATING	RAG	RETURN AIR GRILLE
- - - - - - -	VENT	RD	ROOF DRAIN
—CWS—	CHILLED WATER SUPPLY	TD	TRENCH DRAIN
—CWR—	CHILLED WATER RETURN	TP	TRAP PRIMER
—— SS ——	SANITARY SEWER	(TYP)	TYPICAL
—— SD ——	STORM DRAIN	VD	VOLUME DAMPER
CFM	CUBIC FEET PER MINUTE	VTR	VENT THRU ROOF
CLG.	CEILING	T	TEMPERATURE SENSOR
CO	CLEAN OUT	H	HUMIDITY SENSOR
CONN.	CONNECTION		1 1/2 HOUR UL 555 FIRE DAMPER
CW	COLD WATER		FLEX DUCT
DF	DRINKING FOUNTAIN		BALL VALVE
DN	DOWN	P	PLUMBING RISER DIAGRAM
EF	EXHAUST FAN		GATE VALVE
FD	FLOOR DRAIN		CHECK VALVE
FLD	FIRE DAMPER		VALVE IN VERTICAL RISE
HB	HOSE BIBB		UNION
HW	HOT WATER		AIR CHAMBER (10" HIGH PIPE)
—G—	NATURAL GAS	—CA—	COMPRESSED AIR
—V—	VACUUM	—HWS—	HEATING WATER SUPPLY
		—HWR—	HEATING WATER RETURN

MECHANICAL SCHEDULES
NO SCALE

BLITCH KNEVEL ARCHITECTS
757 ST. CHARLES AVENUE NEW ORLEANS, LOUISIANA 70130
(504) 524-4634 FAX (504) 524-5128

CONSULTANTS:
LUCIEN T. VIVIEN JR. AND ASSOCIATES, INC. CONSULTING ENGINEERS
1321 HICKORY AVENUE - SUITE 100 HARAHAN, LOUISIANA 70123
T (504) 218-5469 F (504) 218-5412
vivienengineers.com

PERMIT SET

College of Pharmacy
Additions and Renovations
Xavier University New Orleans, LA

MARK	DATE	DESCRIPTION
6	12-12-08	CHANGE ORDER #2
	11-05-08	NH SUBMITTAL #2
5	7-08-08	CHANGE ORDER #1
4	6-19-08	NH SUBMITTAL #1
3	5-06-08	PERMIT SET
2	4-28-08	ADDENDUM #3

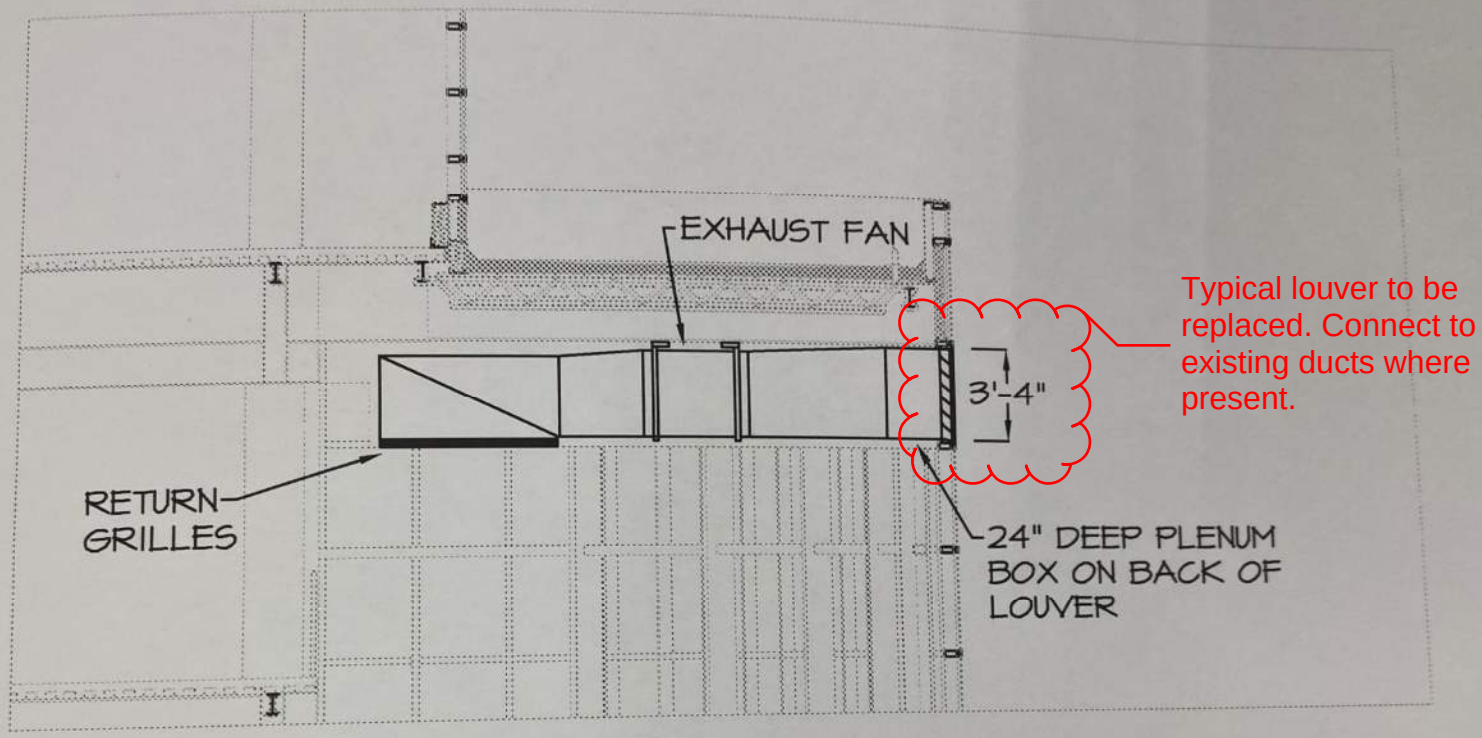
SHEET ISSUED: 03-31-2008
PROJECT NO.: 0442

SHEET TITLE:
MECHANICAL SCHEDULES

SHEET NUMBER:
M-601-R5
SHEET 140 OF 173

STATE OF LOUISIANA
Lucien Eugene Vivien
License No. 7955
Professional Engineer
MAY 06, 2008

SMOKE EXHAUST FAN 1
SMOKE EXHAUST FAN 2
SMOKE EXHAUST FAN 3
SMOKE EXHAUST FAN 4
35,000 CFM
660 CFM
48X6 LD
RETURN GRILLES
EXHAUST FAN
SMOKE EXHAUST FAN 1 DETAIL
SCALE: 1/8"=1'
240" X 40" FLEX BOX ON BACK OF LOUVER
Entire length of louvers shall be replaced. Verify exact sizes and quantities on site.
Blank off louvers not connected to smoke control system with insulated sheet metal. (Typical both sides of Atrium)



1 / M203 SMOKE EXHAUST PARTIAL SECTION

SCALE: 1/8"=1'

* CONTRACTOR TO MODIFY DUCTWORK AS NEEDED TO ACCOMMODATE COILS.

TEMTROL WATER COILS

SUBMITTAL DATA

PROJECT: Xavier University College of Pharmacy
New Orleans, LA

ENGINEER: Lucien T. Vivien & Associates
Harahan, LA

CONTRACTOR: A.H. Guthans Co., Inc.
Metairie, LA

REPRESENTATIVE: Mid-South Equipment, Inc.
5751 River Road
Harahan, LA 70123
504-835-0422 Phone
504-835-0485 Fax

LUCIEN T. VIVIEN JR. & ASSOC., INC.
Review is solely for general conformance with the contract documents. This review does not relieve the contractor of their responsibility of compliance with the contract documents and applicable codes. Dimensions, quantities, errors, omissions and coordination of the work with all trades, shall remain the responsibility of the contractor
MAY 15 2009

DATE: October 3, 2008

Approved As Noted

SUB#67
SHOP DRAWING REVIEW
LANDIS CONSTRUCTION CO., LLC
THIS IS TO CERTIFY THAT THIS SUBMISSION HAS BEEN CHECKED FOR ACCURACY COMPLETENESS AND COMPLIANCE WITH THE CONTRACT REQUIREMENTS. THIS CERTIFICATION DOES NOT RELIEVE THE SUBCONTRACTOR / VENDOR OF THE RESPONSIBILITY FOR COMPLYING FULLY WITH THE CONTRACT DOCUMENTS.
BY SB DATE 4/1/09
JOB # 281 S / D # 15800-010

SUBMITTAL NO 17
WE HEREBY CERTIFY THAT WE HAVE REVIEWED THE FOLLOWING SUBMITTAL FOR COMPLIANCE WITH THE CONTRACT DOCUMENTS
SPEC. SECT 15800
PAGE OR DRWG. NO
DATE 10/28/08 INITIALS MW

College of Pharmacy
Addition and Renovation
Xavier University New Orleans, La.

outside air coils to be replaced only

Energy Recovery Loop Coils

Summer Conditions Outside Air

	CFM	APD	EAT	LAT	GPM	EWT	LWT	WPD
AHU-3	7500	0.3	95/80	86/77.8	67.2	81.5	83.6	5.01'
AHU-4	5700	.57"	95/80	85.6/77.7	54.5	83	85.1	7.93'
AHU-5	9400	0.43	95/80	85.2/77.6	51	81	84.9	7.96'
AHU-6	14600	0.71	95/80	82.5/76.9	88.8	80.4	84.8	10.58'

Outside Air Coil Dimensions

	FH	FL	Row	FPI
AHU-3	36"	60"	4	8
AHU-4	24"	60"	6	8
AHU-5	30"	84"	5	8
AHU-6	60"	70"	6	12

Summer Conditions Exhaust Air

	CFM	APD	EAT	LAT	GPM	EWT	LWT	WPD
AHU-3	6500	.79	74	82.6	67.2	83.6	82.7	13.15'
AHU-4	4850	.71"	74	83.6	54.5	85	83.1	3.3
AHU-5	9460	.84	74	83.3	51	84.6	83.1	11.7'
AHU-6	18250	.75"	74	83.2	88.8	74	83.2	17.25'

Exhaust Air Coil Dimensions

	FH	FL	Row	FPI
AHU-3	30"	60"	6	12
AHU-4	24"	60"	6	12
AHU-5	30"	84"	6	12
AHU-6	48"	109"	6	12

outside air coils to be replaced only

Winter Conditions Outside Air

	CFM	APD	EAT	LAT	GPM	EWT	LWT	WPD
AHU-3	7500	0.34"	20	43.4	67.2	52.6	46.2	5.26'
AHU-4	5700	.6"	20	46.4	54.5	51.3	45.1	8.59'
AHU-5	9400	.48"	20	43.9	51	57	46.1	8.56'
AHU-6	14600	.79"	20	50.3	88.8	57.8	45.5	11.17'

Outside Air Coil Dimensions

	FH	FL	Row	FPI
AHU-3	36"	60"	4	8
AHU-4	24"	60"	6	8
AHU-5	30"	84"	5	8
AHU-6	60"	70"	6	12

Winter Conditions Exhaust Air

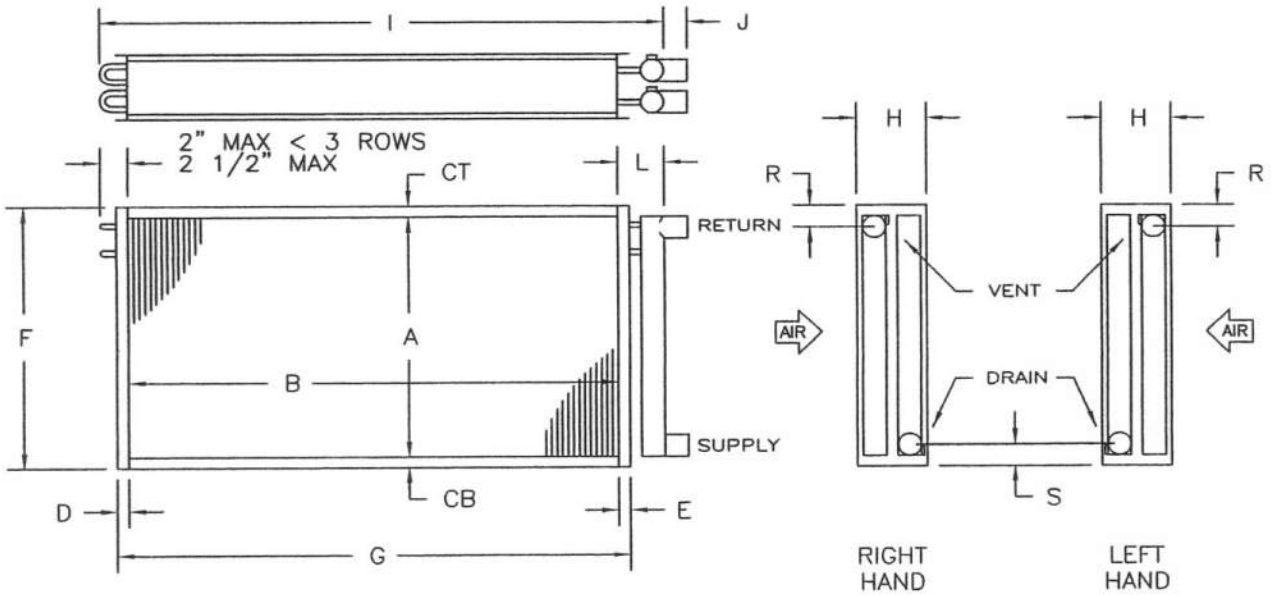
	CFM	APD	EAT	LAT	GPM	EWT	LWT	WPD
AHU-3	6500	1.03"	74	51	67.2	46.2	51.6	14.4
AHU-4	4850	0.89"	74/62	52	51.7	46	52	3.55'
AHU-5	9460	1.02"	74/62.5	52.7	52.6	46.1	46.8	12.7'
AHU-6	18250	.92"	74/62.5	52.2/52.1	88.8	45.5	57.8	18.57'

Exhaust Air Coil Dimensions

	FH	FL	Row	FPI
AHU-3	30"	60"	6	12
AHU-4	24"	60"	6	12
AHU-5	30"	84"	6	12
AHU-6	48"	109"	6	12

NOTE; The energy recovery loop for AHU-6A and AHU-6B require ~~three~~ 2 coils, one in each outside air duct that serves each unit, and one in the exhaust duct that serves exhausts EF6-1and 2

* AHU-6A & AHU-6B will only require one coil at the common outside air intake into the penthouse as shown on the drawings.



Temtrol®

ROWS: 1, 2, 3, 4, 5 6, 8, 10, 12

FINS: 1/2 – 8 thru 14 5/8 – 6 thru 14

TUBE WALL		FINS		CASING
1/2 OD	5/8 OD	1/2 OD	5/8 OD	
.017	.020	.006AL	.008AL	6ga GV
.025	.025		.010AL	
	.035	.006CU	.006CU	
	.049		.008CU	16ga SS
			.010CU	

HEADERS & TUBES – COPPER ONLY

ITEM	SUPPLY	RETURN	CONNECTIONS	
1	2 1/2	2 1/2	RED BRASS	COPPER
2				MPT
3			MPT	FPT
4				SWT

DIMENSIONAL DATA IN INCHES

	QTY	ROWS	FPI	A	B	CT	CB	D	E	F	G	H	I	J	L	S	R
1	1	4	8	36	60	1	1	1	1	38	62	7 1/2	68	5 1/2	5 1/2		
2	1	6	12	30	60	1	1	1	1	32	62	10	68	5 1/2	5 1/2		
3																	
4																	

	MODEL NO.
1	5WC-4-36X60X4-8AL TAG:3-O/A
2	5WC-8-30X60X6-12AL TAG:3-EXH
3	
4	

CUST. AH GOTHANS CO

REP. MID-SOUTH EQUIPMENT

APP	PRINTS	DATE
		10/2/2008

FOR APPROVAL ☐

FOR RECORD ☐

DRAWING NO. WC1-

TAG: XAVIER PHARMACY

PURCHASE ORDER NO. AHU #3

SHOP ORDER NO.

WATER COIL

AHU-3

Coil Selection / Rating 2008.100

Temtrol

Job Name: Xavier
Tag: AHU-3 **Entered By:** Kelly Hasney Sr. **Date:** 10/2/2008 **Serial #:** 0

Chilled Water		5WC - 4 - 36 x 60 x 4 - 8 AL
Individual Coil Construction	**Entering Conditions**	**Leaving Conditions**
(Qty) FH x FL : (1) 36.00 x 60.00	ACFM : 7,500	Total Heat : 69,467 Btu/Hr
Rows - FPI : 4 - 8	SCFM : 6,953	Sensible Heat : 69,467 Btu/Hr
Serpentine : 1.000	Altd : 0 ft	
Total Face Area : 15.0 sq.ft	EDB : 95.0°F	LDB : 86.0°F
Fin Thick / Mat. : 0.008" / AL	EWB : 80.0°F	LWB : 77.8°F
Tube O.D. / Wall : 5/8" / 0.020"		
Tube Material : CU	EWT : 81.5°F	LWT : 83.6°F
Case Material : 16 GA GALV	Fluid : Ethylene	Actual FV : 500.0 ft/min
Conn Location : RH Same	Fluid Wt : 15.0 %	APD : 0.3 in.WG
Sup.Conn - Qty / Size : (1) 2-1/2"	GPM : 67.20	Water Velocity : 3.11 ft/s
Ret.Conn - Qty / Size : (1) 2-1/2"		Water PD : 5.01 ft
Rated in Compliance with ARI Standard 410		

1. (Glycol) falls outside the range of Standard Rating Conditions specified in 'ARI Standard 410'.

SUMMER CONDITIONS

Tag: AHU-3 EXT **Entered By:** Kelly Hasney Sr. **Serial #:** 0

Hot Water		5WC - 8 - 30 x 60 x 6 - 12 AL
Individual Coil Construction	**Entering Conditions**	**Leaving Conditions**
(Qty) FH x FL : (1) 30.00 x 60.00	ACFM : 6,500	Total Heat : 60,336 Btu/Hr
Rows - FPI : 6 - 12	SCFM : 6,451	Sensible Heat : 60,336 Btu/Hr
Serpentine : 0.750	Altd : 0 ft	
Total Face Area : 12.5 sq.ft	EDB : 74.0°F	LDB : 82.6°F
Fin Thick / Mat. : 0.008" / AL		
Tube O.D. / Wall : 5/8" / 0.020"		
Tube Material : CU	EWT : 83.6°F	LWT : 81.7°F
Case Material : 16 GA GALV	Fluid : Ethylene	Actual FV : 520.0 ft/min
Conn Location : RH Same	Fluid Wt : 15.0 %	APD : 0.79 in.WG
Sup.Conn - Qty / Size : (1) 2-1/2"	GPM : 67.20	Water Velocity : 4.97 ft/s
Ret.Conn - Qty / Size : (1) 2-1/2"		Water PD : 13.15 ft
Rated in Compliance with ARI Standard 410		

1. (Glycol) falls outside the range of Standard Rating Conditions specified in 'ARI Standard 410'.

Coil Selection / Rating 2008.100

Temtrol

Job Name: Xavier **Date:** 10/2/2008
Tag: AHU-3 heat **Entered By:** Kelly Hasney Sr. **Serial #:** 0

Hot Water		5WC - 4 - 36 x 60 x 4 - 8 AL
Individual Coil Construction	**Entering Conditions**	**Leaving Conditions**
(Qty) FH x FL : (1) 36.00 x 60.00	**ACFM :** 7,500	**Total Heat :** 210,559 Btu/Hr
Rows - FPI : 4 - 8	**SCFM :** 8,282	**Sensible Heat :** 210,559 Btu/Hr
Serpentine : 1.000	**Altd :** 0 ft	
Total Face Area : 15.0 sq.ft	**EDB :** 20.0°F	**LDB :** 43.4°F
Fin Thick / Mat. : 0.008" / AL		
Tube O.D. / Wall : 5/8" / 0.020"		
Tube Material : CU	**EWT :** 52.6°F	**LWT :** 46.2°F
Case Material : 16 GA GALV	**Fluid :** Ethylene	**Actual FV :** 500.0 ft/min
Conn Location : RH Same	**Fluid Wt :** 15.0 %	**APD :** 0.34 in.WG
Sup.Conn - Qty / Size : (1) 2-1/2"	**GPM :** 67.20	**Water Velocity :** 3.11 ft/s
Ret.Conn - Qty / Size : (1) 2-1/2"		**Water PD :** 5.26 ft
Rated in Compliance with ARI Standard 410		

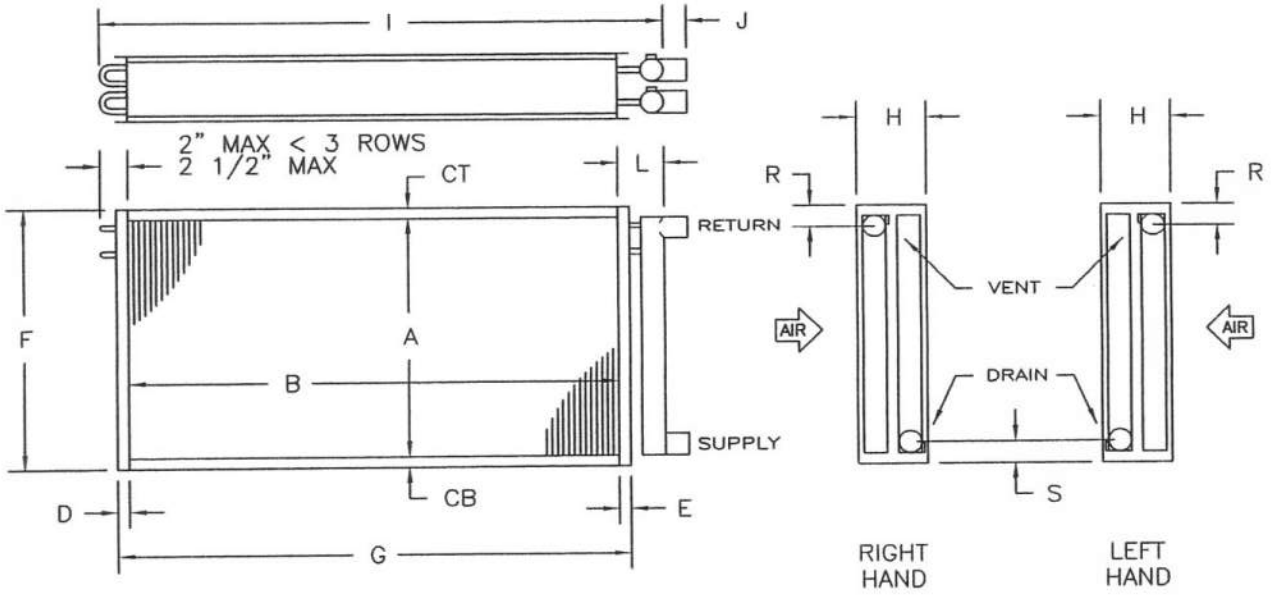
1. (Glycol) falls outside the range of Standard Rating Conditions specified in 'ARI Standard 410'.

WINTER CONDITIONS

Tag: AHU-3 heat ext **Entered By:** Kelly Hasney Sr. **Serial #:** 0

Chilled Water		5WC - 8 - 30 x 60 x 6 - 12 AL
Individual Coil Construction	**Entering Conditions**	**Leaving Conditions**
(Qty) FH x FL : (1) 30.00 x 60.00	**ACFM :** 6,500	**Total Heat :** 210,033 Btu/Hr
Rows - FPI : 6 - 12	**SCFM :** 6,355	**Sensible Heat :** 160,650 Btu/Hr
Serpentine : 0.750	**Altd :** 0 ft	
Total Face Area : 12.5 sq.ft	**EDB :** 74.0°F	**LDB :** 51.0°F
Fin Thick / Mat. : 0.008" / AL	**EWB :** 62.5°F	**LWB :** 50.8°F
Tube O.D. / Wall : 5/8" / 0.020"		
Tube Material : CU	**EWT :** 46.2°F	**LWT :** 52.6°F
Case Material : 16 GA GALV	**Fluid :** Ethylene	**Actual FV :** 520.0 ft/min
Conn Location : RH Same	**Fluid Wt :** 15.0 %	**APD :** 1.03 in.WG
Sup.Conn - Qty / Size : (1) 2-1/2"	**GPM :** 67.20	**Water Velocity :** 4.97 ft/s
Ret.Conn - Qty / Size : (1) 2-1/2"		**Water PD :** 14.36 ft
Rated in Compliance with ARI Standard 410		

(Glycol) falls outside the range of Standard Rating Conditions specified in 'ARI Standard 410'.



Temtrol®

ROWS:	FINS:
1, 2, 3, 4, 5 6, 8, 10, 12	1/2 – 8 thru 14 5/8 – 6 thru 14

TUBE WALL		FINS		CASING
1/2 OD	5/8 OD	1/2 OD	5/8 OD	
.017	.020	.006AL	.008AL	
.025	.025		.010AL	16ga GV
	.035	.006CU	.006CU	
	.049		.008CU	16ga SS
			.010CU	

HEADERS & TUBES – COPPER ONLY

ITEM	SUPPLY	RETURN	CONNECTIONS	
			RED BRASS	COPPER
1	2	2		
2	2	2		MPT
3			MPT	FPT
4				SWT

DIMENSIONAL DATA IN INCHES

	QTY	ROWS	FPI	A	B	CT	CB	D	E	F	G	H	I	J	L	S	R
1	1	6	8	24	60	1	1	1	1	26	62	10	68	5½	5½		
2	1	6	8	24	60	1	1	1	1	26	62	10	68	5½	5½		
3																	
4																	

MODEL NO.	
1	5WC-6-24X60X6-8AL Tag: AHU4OA
2	5WC-4-24X60X6-12AL Tag: AHU4 EXH
3	
4	

CUST. A H GUTHANS CO

REP. MID-SOUTH EQUIPMENT

APP	PRINTS	DATE
		10/2/2008

FOR APPROVAL ☐

FOR RECORD ☐

DRAWING NO. WC1-

TAG: AHU-4

PURCHASE ORDER NO.

SHOP ORDER NO.

WATER COIL

Coil Selection / Rating 2008.100

Temtrol

Job Name: Xavier
Tag: AHU-4 **Entered By:** Kelly Hasney Sr. **Date:** 9/23/2008 **Serial #:** 0

Chilled Water		5WC - 6 - 24 x 60 x 6 - 8 AL
Individual Coil Construction	**Entering Conditions**	**Leaving Conditions**
(Qty) FH x FL : (1) 24.00 x 60.00	ACFM : 5,700	Total Heat : 55,246 Btu/Hr
Rows - FPI : 6 - 8	SCFM : 5,284	Sensible Heat : 55,246 Btu/Hr
Serpentine : 1.000	Altd : 0 ft	
Total Face Area : 10.0 sq.ft	EDB : 95.0°F	LDB : 85.6°F
Fin Thick / Mat. : 0.008" / AL	EWB : 80.0°F	LWB : 77.7°F
Tube O.D. / Wall : 5/8" / 0.020"		
Tube Material : CU	EWT : 83.0°F	LWT : 85.1°F
Case Material : 16 GA GALV	Fluid : Ethylene	Actual FV : 570.0 ft/min
Conn Location : RH Same	Fluid Wt : 15.0 %	APD : 0.57 in.WG
Sup.Conn - Qty / Size : (1) 2"	GPM : 54.50	Water Velocity : 3.78 ft/s
Ret.Conn - Qty / Size : (1) 2"		Water PD : 7.93 ft
Rated in Compliance with ARI Standard 410		

1. (Glycol) falls outside the range of Standard Rating Conditions specified in 'ARI Standard 410'.
2. To avoid water carry over, Temtrol recommends Cooling Coil FV < 550 fpm.

SUMMER CONDITIONS

Tag: AHU-4 exh **Entered By:** Kelly Hasney Sr. **Serial #:** 0

Hot Water		5WC - 4 - 24 x 60 x 6 - 12 AL
Individual Coil Construction	**Entering Conditions**	**Leaving Conditions**
(Qty) FH x FL : (1) 24.00 x 60.00	ACFM : 4,850	Total Heat : 50,124 Btu/Hr
Rows - FPI : 6 - 12	SCFM : 4,814	Sensible Heat : 50,124 Btu/Hr
Serpentine : 1.500	Altd : 0 ft	
Total Face Area : 10.0 sq.ft	EDB : 74.0°F	LDB : 83.6°F
Fin Thick / Mat. : 0.008" / AL		
Tube O.D. / Wall : 5/8" / 0.020"		
Tube Material : CU	EWT : 85.0°F	LWT : 83.1°F
Case Material : 16 GA GALV	Fluid : Ethylene	Actual FV : 485.0 ft/min
Conn Location : RH Same	Fluid Wt : 15.0 %	APD : 0.71 in.WG
Sup.Conn - Qty / Size : (1) 2-1/2"	GPM : 54.50	Water Velocity : 2.52 ft/s
Ret.Conn - Qty / Size : (1) 2-1/2"		Water PD : 3.37 ft
Rated in Compliance with ARI Standard 410		

1. (Glycol) falls outside the range of Standard Rating Conditions specified in 'ARI Standard 410'.

Coil Selection / Rating 2008.100

Temtrol

Job Name: Xavier
Tag: AHU-4 heat
Entered By: Kelly Hasney Sr.
Date: 9/23/2008
Serial #: 0

Hot Water		5WC - 6 - 24 x 60 x 6 - 8 AL
Individual Coil Construction	**Entering Conditions**	**Leaving Conditions**
(Qty) FH x FL : (1) 24.00 x 60.00	ACFM : 5,700	Total Heat : 163,292 Btu/Hr
Rows - FPI : 6 - 8	SCFM : 5,700	Sensible Heat : 163,292 Btu/Hr
Serpentine : 1.000	Altd : 0 ft	
Total Face Area : 10.0 sq.ft	EDB : 20.0°F	LDB : 46.4°F
Fin Thick / Mat. : 0.008" / AL		
Tube O.D. / Wall : 5/8" / 0.020"		
Tube Material : CU	EWT : 51.3°F	LWT : 45.1°F
Case Material : 16 GA GALV	Fluid : Ethylene	Actual FV : 570.0 ft/min
Conn Location : RH Same	Fluid Wt : 15.0 %	APD : 0.6 in.WG
Sup.Conn - Qty / Size : (1) 2"	GPM : 54.50	Water Velocity : 3.78 ft/s
Ret.Conn - Qty / Size : (1) 2"		Water PD : 8.59 ft
Rated in Compliance with ARI Standard 410		

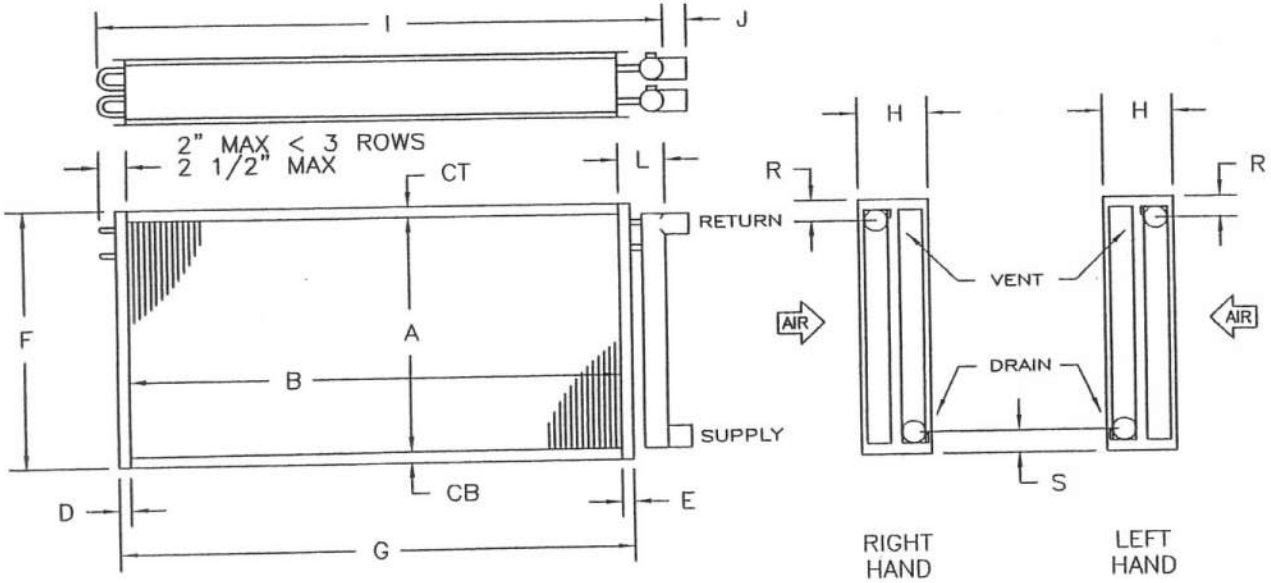
1. (Glycol) falls outside the range of Standard Rating Conditions specified in 'ARI Standard 410'.

WINTER CONDITIONS

Tag: AHU-4 heat exh
Entered By: Kelly Hasney Sr.
Serial #: 0

Chilled Water		5WC - 4 - 24 x 60 x 6 - 12 AL
Individual Coil Construction	**Entering Conditions**	**Leaving Conditions**
(Qty) FH x FL : (1) 24.00 x 60.00	ACFM : 4,850	Total Heat : 141,450 Btu/Hr
Rows - FPI : 6 - 12	SCFM : 4,850	Sensible Heat : 117,802 Btu/Hr
Serpentine : 1.500	Altd : 0 ft	
Total Face Area : 10.0 sq.ft	EDB : 74.0°F	LDB : 51.9°F
Fin Thick / Mat. : 0.008" / AL	EWB : 62.0°F	LWB : 51.7°F
Tube O.D. / Wall : 5/8" / 0.020"		
Tube Material : CU	EWT : 46.0°F	LWT : 51.3°F
Case Material : 16 GA GALV	Fluid : Ethylene	Actual FV : 485.0 ft/min
Conn Location : RH Same	Fluid Wt : 15.0 %	APD : 0.89 in.WG
Sup.Conn - Qty / Size : (1) 2-1/2"	GPM : 54.50	Water Velocity : 2.52 ft/s
Ret.Conn - Qty / Size : (1) 2-1/2"		Water PD : 3.55 ft
Rated in Compliance with ARI Standard 410		

1. (Glycol) falls outside the range of Standard Rating Conditions specified in 'ARI Standard 410'.



Temtrol

ROWS:	FINS:
1, 2, 3, 4, 5 6, 8, 10, 12	1/2 – 8 thru 14 5/8 – 6 thru 14

TUBE WALL		FINS		CASING
1/2 OD	5/8 OD	1/2 OD	5/8 OD	
.017	.020	.006AL	.008AL	16ga GV
.025	.025		.010AL	
	.035	.006CU	.006CU	
	.049		.008CU	16ga SS
			.010CU	

HEADERS & TUBES – COPPER ONLY

ITEM	SUPPLY	RETURN	CONNECTIONS	
			RED BRASS	COPPER
1	2	2		MPT
2	2	2	MPT	FPT
3				SWT
4				

DIMENSIONAL DATA IN INCHES

	QTY	ROWS	FPI	A	B	CT	CB	D	E	F	G	H	I	J	L	S	R
1	1	6	8	30	84	1	1	1	1	32	86	10	94	5½	5½		
2	1	6	12	30	84	1	1	1	1	32	86	10	94	5½	5½		
3																	
4																	

MODEL NO.	
1	5WC-6-30X84X5-8AL TAG: AHU-5 O/A
2	5WC-8-30X84X6-12AL TAG: AHU-5 EXH
3	
4	

CUST. AH GUTHANS CO

REP. MID-SOUTH EQUIPMENT

APP	PRINTS	DATE
		10/2/08

FOR APPROVAL ☐

FOR RECORD ☐

DRAWING NO. WC1-

TAG: AHU-5

PURCHASE ORDER NO.

SHOP ORDER NO.

WATER COIL

AHU-5

Coil Selection / Rating 2008.100

Temtrol

Job Name: Xavier University
Tag: AHU-5
Entered By: Kelly Hasney Sr.
Date: 9/23/2008
Serial #: 0

Chilled Water		5WC - 6 - 30 x 84 x 5 - 8 AL
Individual Coil Construction	**Entering Conditions**	**Leaving Conditions**
(Qty) FH x FL : (1) 30.00 x 84.00	ACFM : 9,400	Total Heat : 95,309 Btu/Hr
Rows - FPI : 5 - 8	SCFM : 8,714	Sensible Heat : 95,309 Btu/Hr
Serpentine : 0.833	Altd : 0 ft	
Total Face Area : 17.5 sq.ft	EDB : 95.0°F	LDB : 85.2°F
Fin Thick / Mat. : 0.008" / AL	EWB : 80.0°F	LWB : 77.6°F
Tube O.D. / Wall : 5/8" / 0.020"		
Tube Material : CU	EWT : 81.0°F	LWT : 84.9°F
Case Material : 16 GA GALV	Fluid : Ethylene	Actual FV : 537.1 ft/min
Conn Location : RH Same	Fluid Wt : 15.0 %	APD : 0.43 in.WG
Sup.Conn - Qty / Size : (1) 2"	GPM : 51.00	Water Velocity : 3.33 ft/s
Ret.Conn - Qty / Size : (1) 2"		Water PD : 7.96 ft
Rated in Compliance with ARI Standard 410		

SUMMER CONDITIONS

Tag: AHU-5 EXH
Entered By: Kelly Hasney Sr.
Serial #: 0

Hot Water		5WC - 8 - 30 x 84 x 6 - 12 AL
Individual Coil Construction	**Entering Conditions**	**Leaving Conditions**
(Qty) FH x FL : (1) 30.00 x 84.00	ACFM : 9,460	Total Heat : 94,294 Btu/Hr
Rows - FPI : 6 - 12	SCFM : 9,389	Sensible Heat : 94,294 Btu/Hr
Serpentine : 0.750	Altd : 0 ft	
Total Face Area : 17.5 sq.ft	EDB : 74.0°F	LDB : 83.3°F
Fin Thick / Mat. : 0.010" / AL		
Tube O.D. / Wall : 5/8" / 0.020"		
Tube Material : CU	EWT : 84.9°F	LWT : 81.1°F
Case Material : 16 GA GALV	Fluid : Ethylene	Actual FV : 540.6 ft/min
Conn Location : RH Same	Fluid Wt : 15.0 %	APD : 0.84 in.WG
Sup.Conn - Qty / Size : (1) 2"	GPM : 51.00	Water Velocity : 3.77 ft/s
Ret.Conn - Qty / Size : (1) 2"		Water PD : 11.7 ft
Rated in Compliance with ARI Standard 410		

1. (Glycol) falls outside the range of Standard Rating Conditions specified in 'ARI Standard 410'.

Coil Selection / Rating 2008.100

Temtrol

Job Name: Xavier University
Tag: AHU-5 Heat
Entered By: Kelly Hasney Sr.
Date: 9/23/2008
Serial #: 0

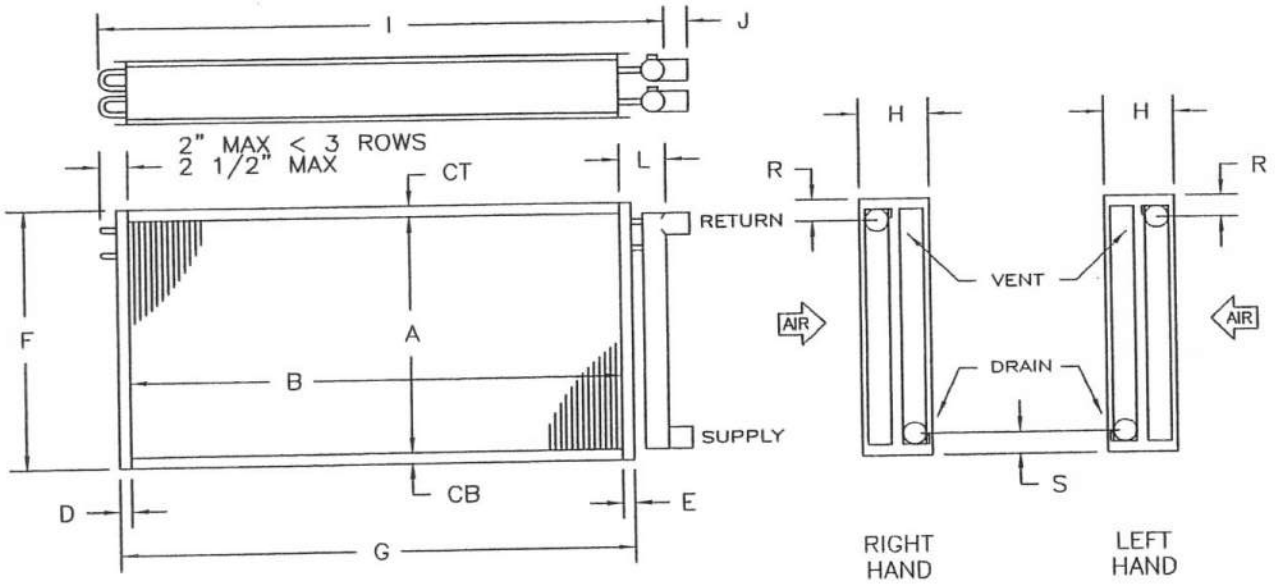
Hot Water		5WC - 6 - 30 x 84 x 5 - 8 AL
Individual Coil Construction	**Entering Conditions**	**Leaving Conditions**
(Qty) FH x FL : (1) 30.00 x 84.00	ACFM : 9,400	Total Heat : 269,124 Btu/Hr
Rows - FPI : 5 - 8	SCFM : 10,380	Sensible Heat : 269,124 Btu/Hr
Serpentine : 0.833	Altd : 0 ft	
Total Face Area : 17.5 sq.ft	EDB : 20.0°F	LDB : 43.9°F
Fin Thick / Mat. : 0.010" / AL		
Tube O.D. / Wall : 5/8" / 0.020"		
Tube Material : CU	EWT : 57.0°F	LWT : 46.1°F
Case Material : 16 GA GALV	Fluid : Ethylene	Actual FV : 537.1 ft/min
Conn Location : RH Same	Fluid Wt : 15.0 %	APD : 0.48 in.WG
Sup.Conn - Qty / Size : (1) 2"	GPM : 51.00	Water Velocity : 3.33 ft/s
Ret.Conn - Qty / Size : (1) 2"		Water PD : 8.56 ft
Rated in Compliance with ARI Standard 410		

WINTER CONDITIONS

Tag: AHU-5 heat EXH
Entered By: Kelly Hasney Sr.
Serial #: 0

Chilled Water		5WC - 8 - 30 x 84 x 6 - 12 AL
Individual Coil Construction	**Entering Conditions**	**Leaving Conditions**
(Qty) FH x FL : (1) 30.00 x 84.00	ACFM : 9,460	Total Heat : 264,206 Btu/Hr
Rows - FPI : 6 - 12	SCFM : 9,249	Sensible Heat : 215,982 Btu/Hr
Serpentine : 0.750	Altd : 0 ft	
Total Face Area : 17.5 sq.ft	EDB : 74.0°F	LDB : 52.7°F
Fin Thick / Mat. : 0.008" / AL	EWB : 62.5°F	LWB : 52.6°F
Tube O.D. / Wall : 5/8" / 0.020"		
Tube Material : CU	EWT : 46.1°F	LWT : 56.8°F
Case Material : 16 GA GALV	Fluid : Ethylene	Actual FV : 540.6 ft/min
Conn Location : RH Same	Fluid Wt : 15.0 %	APD : 1.02 in.WG
Sup.Conn - Qty / Size : (1) 2"	GPM : 51.00	Water Velocity : 3.77 ft/s
Ret.Conn - Qty / Size : (1) 2"		Water PD : 12.72 ft
Rated in Compliance with ARI Standard 410		

. (Glycol) falls outside the range of Standard Rating Conditions specified in 'ARI Standard 410'.



Temtrol

ROWS:	FINS:
1, 2, 3, 4, 5 6, 8, 10, 12	1/2 – 8 thru 14 5/8 – 6 thru 14

TUBE WALL		FINS		CASING
1/2 OD	5/8 OD	1/2 OD	5/8 OD	
.017	.020	.006AL	.008AL	
.025	.025		.010AL	6ga GV
	.035	.006CU	.006CU	
	.049		.008CU	16ga SS
			.010CU	

HEADERS & TUBES – COPPER ONLY

ITEM	SUPPLY	RETURN	CONNECTIONS	
			RED BRASS	COPPER
1	2 1/2	2 1/2		MPT
2			MPT	FPT
3				SWT
4				

DIMENSIONAL DATA IN INCHES

	QTY	ROWS	FPI	A	B	CT	CB	D	E	F	G	H	I	J	L	S	R
1	2	6	12	48	109	1	1	1	1	50	111	10	119	5½	5½		
2	1	6	12	60	70	1	1	1	1	62	72	10	78	5½	5½		
3																	
4																	

MODEL NO.	
1	5WC-8-48X109X6-12AL TAG: AHU6 O/A
2	5WC-8-60X70X6-12AL TAG: AHU6-EXH
3	
4	

CUST. AH GUTHANS

REP MID-SOUTH EQUIPMENT

APP	PRINTS	DATE

FOR APPROVAL ☐

FOR RECORD ☐

DRAWING NO. WC1-

TAG: AHU-6

PURCHASE ORDER NO.

SHOP ORDER NO.

WATER COIL

AHU-6

Coil Selection / Rating 2008.100

Temtrol

Job Name: Xavier University
Tag: AHU-6 **Entered By:** Kelly Hasney Sr.
Date: 9/23/2008
Serial #: 0

Chilled Water		5WC - 8 - 60 x 70 x 6 - 12 AL
Individual Coil Construction	**Entering Conditions**	**Leaving Conditions**
(Qty) FH x FL : (1) 60.00 x 70.00	ACFM : 14,600	Total Heat : 188,932 Btu/Hr
Rows - FPI : 6 - 12	SCFM : 13,535	Sensible Heat : 188,932 Btu/Hr
Serpentine : 0.750	Altd : 0 ft	
Total Face Area : 29.17 sq.ft	EDB : 95.0°F	LDB : 82.5°F
Fin Thick / Mat. : 0.008" / AL	EWB : 80.0°F	LWB : 76.9°F
Tube O.D. / Wall : 5/8" / 0.020"		
Tube Material : CU	EWT : 80.4°F	LWT : 84.8°F
Case Material : 16 GA GALV	Fluid : Ethylene	Actual FV : 500.6 ft/min
Conn Location : RH Same	Fluid Wt : 15.0 %	APD : 0.71 in.WG
Sup.Conn - Qty / Size : (1) 2-1/2"	GPM : 88.80	Water Velocity : 3.28 ft/s
Ret.Conn - Qty / Size : (1) 2-1/2"		Water PD : 10.58 ft
Rated in Compliance with ARI Standard 410		

1. (Glycol) falls outside the range of Standard Rating Conditions specified in 'ARI Standard 410'.

SUMMER CONDITIONS

Tag: AHU-6 EXH **Entered By:** Kelly Hasney Sr. **Serial #:** 0

Hot Water		5WC - 8 - 48 x 109 x 6 - 12 AL
Individual Coil Construction	**Entering Conditions**	**Leaving Conditions**
(Qty) FH x FL : (1) 48.00 x 109.00	ACFM : 18,250	Total Heat : 180,370 Btu/Hr
Rows - FPI : 6 - 12	SCFM : 18,113	Sensible Heat : 180,370 Btu/Hr
Serpentine : 1.000	Altd : 0 ft	
Total Face Area : 36.33 sq.ft	EDB : 74.0°F	LDB : 83.2°F
Fin Thick / Mat. : 0.008" / AL		
Tube O.D. / Wall : 5/8" / 0.020"		
Tube Material : CU	EWT : 84.8°F	LWT : 80.6°F
Case Material : 16 GA GALV	Fluid : Ethylene	Actual FV : 502.3 ft/min
Conn Location : RH Same	Fluid Wt : 15.0 %	APD : 0.75 in.WG
Sup.Conn - Qty / Size : (1) 2-1/2"	GPM : 88.80	Water Velocity : 4.1 ft/s
Ret.Conn - Qty / Size : (1) 2-1/2"		Water PD : 17.25 ft
Rated in Compliance with ARI Standard 410		

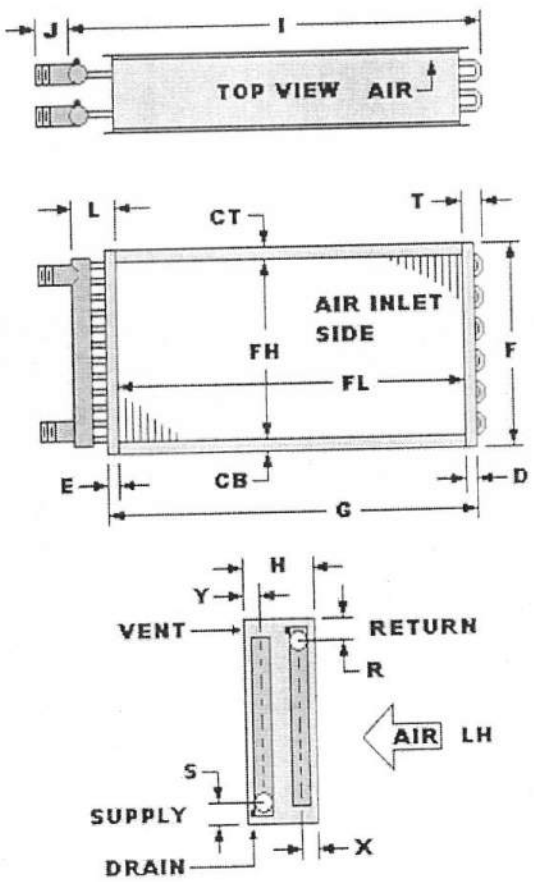
. (Glycol) falls outside the range of Standard Rating Conditions specified in 'ARI Standard 410'.

Order Verification

Order No.:T000003407

Temtrol

Line	Ship Date	Qty	Item	Due Date Type	Each Price	Net Amount
1	09/18/2009	1	LOOSE COIL 5WC4 -36 x60 x4 -8A -LH. .LA AHU-3 O/A	Standard	1,329.00	1,329.00



Tube Size o.d.	5/8"
Tube Wall	.020" copper
Application	WATER COIL
Passes	4
Fin Height	36
Fin Length	60
Rows	4
Fins Per Inch	8
Fin Material	Aluminum
Fin Thickness	0.008"
Hand	LH
Case Material	16 ga. Galvanized
CT - top flange	1"
CB - bottom flange	1"
F- casing height	38
E - flange	1.5
D - flange	1.5
G - casing length	63
H - casing depth	7.5
L - over headers	5.5
K - over headers	N/A
T - over return bends	2.5
I - overall length	68
J - connection length	6

Dry Coil wt.=197

Notes:

Test psig = 315

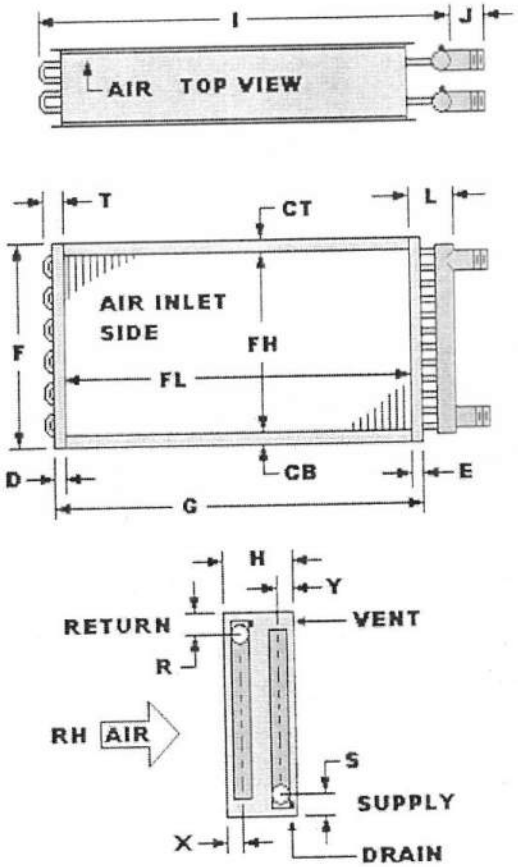
Supply - type	Sweat Copper
Supply - Size	2 1/2"
Supply header	2 5/8" o.d. Copper Header
S - supply location	2.25
ST - extra supply	N/A
Y - supply location	1.8015
Return - type	Sweat Copper
Return - size	2 1/2"
Return header	2 5/8" o.d. Copper Header
R - return location	2.25
RB - extra return	N/A
X - return location	1.8015
Left header offset	No Move
Right header offset	No Move
Vent & drain	1/8" FPT/RB
Return bend wall	0.028"

Order Verification

Order No.:T000003407

Temtrol

Line	Ship Date	Qty	Item	Due Date Type	Each Price	Net Amount
2	09/18/2009	1	LOOSE COIL 5WC8 -30 x60 x6 -12A -RH. .LA AHU-3 EXH	Standard	1,557.00	1,557.00



Tube Size o.d.	5/8"
Tube Wall	.020" copper
Application	WATER COIL
Passes	8
Fin Height	30
Fin Length	60
Rows	6
Fins Per Inch	12
Fin Material	Aluminum
Fin Thickness	0.008"
Hand	RH
Case Material	16 ga. Galvanized
CT - top flange	1"
CB - bottom flange	1"
F- casing height	32
E - flange	1.5
D - flange	1.5
G - casing length	63
H - casing depth	10
L - over headers	5.5
K - over headers	N/A
T - over return bends	2.5
I - overall length	68
J - connection length	6

Dry Coil wt.=275

Notes:

Test psig = 315

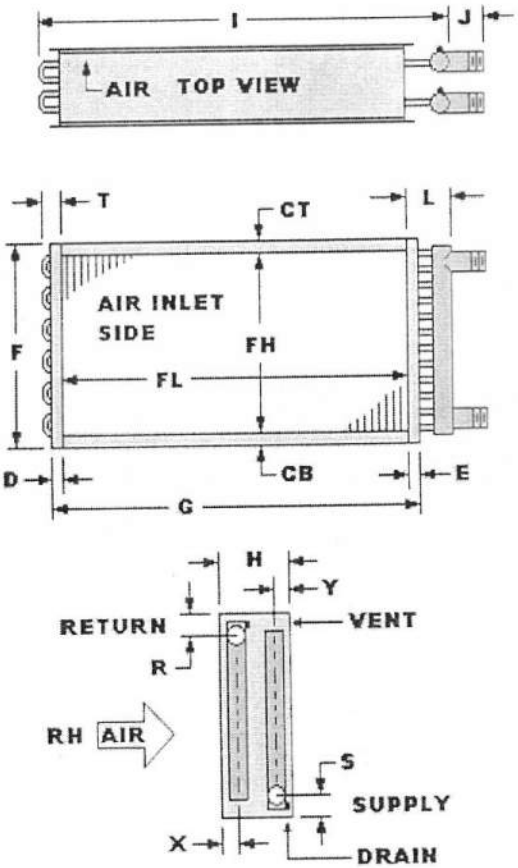
Supply - type	Sweat Copper
Supply - Size	2 1/2"
Supply header	2 5/8" o.d. Copper Header
S - supply location	2.25
ST - extra supply	N/A
Y - supply location	1.7525
Return - type	Sweat Copper
Return - size	2 1/2"
Return header	2 5/8" o.d. Copper Header
R - return location	2.25
RB - extra return	N/A
X - return location	1.7525
Left header offset	No Move
Right header offset	No Move
Vent & drain	1/8" FPT/RB
Return bend wall	0.028"

Order Verification

Order No.:T000003407

Temtrol

Line	Ship Date	Qty	Item	Due Date Type	Each Price	Net Amount
3	09/18/2009	1	LOOSE COIL 5WC6 -24 x60 x6 -8A -RH. .LA AHU-4 O/A	Standard	1,261.00	1,261.00



Tube Size o.d.	5/8"
Tube Wall	.020" copper
Application	WATER COIL
Passes	6
Fin Height	24
Fin Length	60
Rows	6
Fins Per Inch	8
Fin Material	Aluminum
Fin Thickness	0.008"
Hand	RH
Case Material	16 ga. Galvanized
CT - top flange	1"
CB - bottom flange	1"
F- casing height	26
E - flange	1.5
D - flange	1.5
G - casing length	63
H - casing depth	10
L - over headers	5
K - over headers	N/A
T - over return bends	2.5
I - overall length	67.5
J - connection length	6

Dry Coil wt.=194

Notes:

Test psig = 315

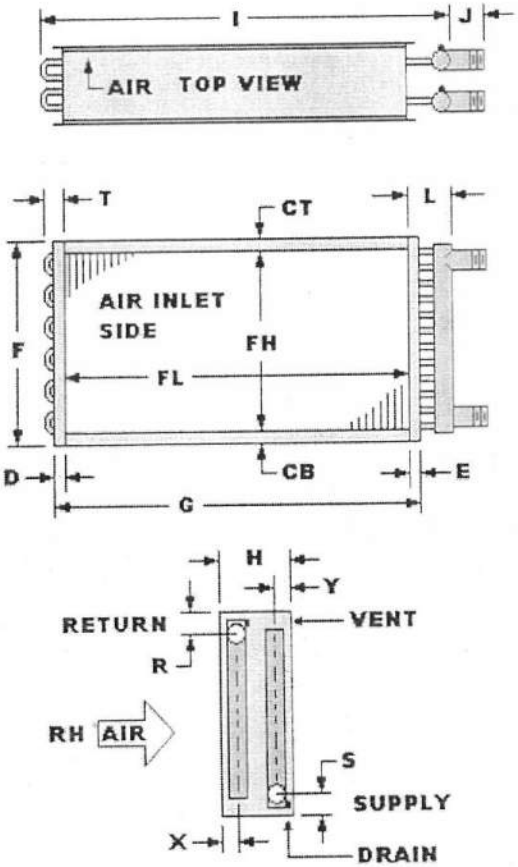
Supply - type	Sweat Copper
Supply - Size	2"
Supply header	2 1/8" o.d. Copper Header
S - supply location	2
ST - extra supply	N/A
Y - supply location	1.7525
Return - type	Sweat Copper
Return - size	2"
Return header	2 1/8" o.d. Copper Header
R - return location	2
RB - extra return	N/A
X - return location	1.7525
Left header offset	No Move
Right header offset	No Move
Vent & drain	1/8" FPT/RB
Return bend wall	0.028"

Order Verification

Order No.:T000003407

Temtrol

Line	Ship Date	Qty	Item	Due Date Type	Each Price	Net Amount
4	09/18/2009	1	LOOSE COIL 5WC4 -24 x60 x6 -12A -RH. .LA AHU-4 EXH	Standard	1,379.00	1,379.00



Tube Size o.d.	5/8"
Tube Wall	.020" copper
Application	WATER COIL
Passes	4
Fin Height	24
Fin Length	60
Rows	6
Fins Per Inch	12
Fin Material	Aluminum
Fin Thickness	0.008"
Hand	RH
Case Material	16 ga. Galvanized
CT - top flange	1"
CB - bottom flange	1"
F- casing height	26
E - flange	1.5
D - flange	1.5
G - casing length	63
H - casing depth	10
L - over headers	5.5
K - over headers	N/A
T - over return bends	2.5
I - overall length	68
J - connection length	6

Dry Coil wt.=227

Notes:

Test psig = 315

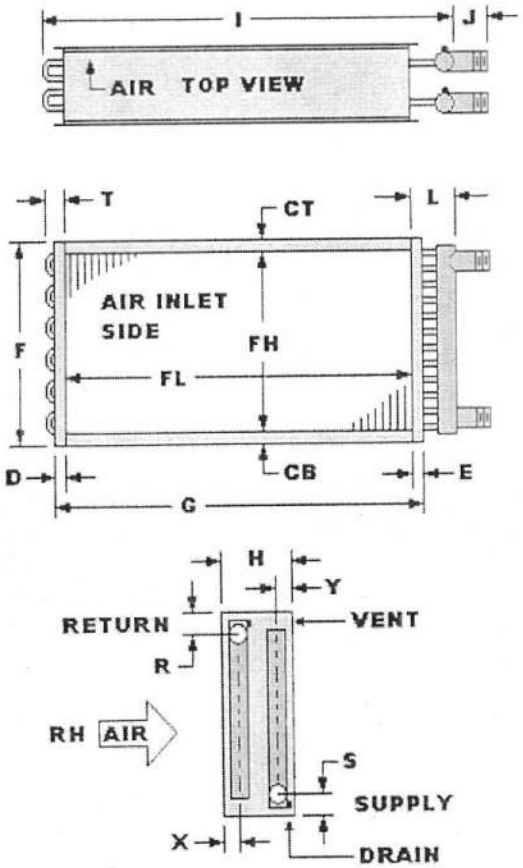
Supply - type	Sweat Copper
Supply - Size	2"
Supply header	2 5/8" o.d. Copper Header
S - supply location	2
ST - extra supply	N/A
Y - supply location	2.402
Return - type	Sweat Copper
Return - size	2"
Return header	2 5/8" o.d. Copper Header
R - return location	2
RB - extra return	N/A
X - return location	2.402
Left header offset	No Move
Right header offset	No Move
Vent & drain	1/8" FPT/RB
Return bend wall	0.028"

Order Verification

Order No.:T000003407

Temtrol

Line	Ship Date	Qty	Item	Due Date Type	Each Price	Net Amount
5	09/18/2009	1	LOOSE COIL 5WC6 -30 x84 x5 -8A -RH. .LA AHU-5 O/A	Standard	1,699.00	1,699.00



Tube Size o.d.	5/8"
Tube Wall	.020" copper
Application	WATER COIL
Passes	6
Fin Height	30
Fin Length	84
Rows	5
Fins Per Inch	8
Fin Material	Aluminum
Fin Thickness	0.008"
Hand	RH
Case Material	16 ga. Galvanized
CT - top flange	1"
CB - bottom flange	1"
F- casing height	32
E - flange	1.5
D - flange	1.5
G - casing length	87
H - casing depth	10
L - over headers	5
K - over headers	N/A
T - over return bends	2.5
I - overall length	91.5
J - connection length	6

Dry Coil wt.=280

Notes:

Test psig = 315

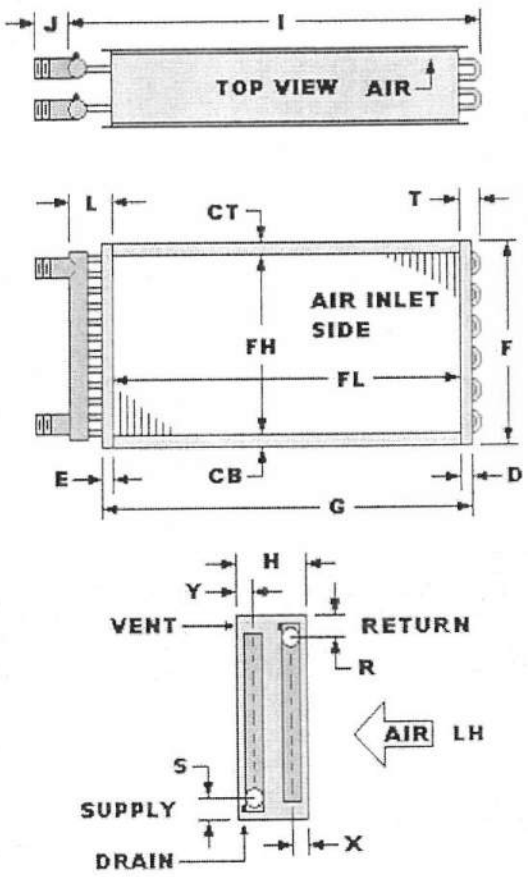
Supply - type	Sweat Copper
Supply - Size	2"
Supply header	2 1/8" o.d. Copper Header
S - supply location	2
ST - extra supply	N/A
Y - supply location	2.402
Return - type	Sweat Copper
Return - size	2"
Return header	2 1/8" o.d. Copper Header
R - return location	2
RB - extra return	N/A
X - return location	2.402
Left header offset	No Move
Right header offset	No Move
Vent & drain	1/8" FPT/RB
Return bend wall	0.028"

Order Verification

Order No.:T000003407

Temtrol

Line	Ship Date	Qty	Item	Due Date Type	Each Price	Net Amount
6	09/18/2009	1	LOOSE COIL 5WC8 -30 x84 x6 -12A -LH. .LA AHU-5 EXH	Standard	1,880.00	1,880.00



Tube Size o.d.	5/8"
Tube Wall	.020" copper
Application	WATER COIL
Passes	8
Fin Height	30
Fin Length	84
Rows	6
Fins Per Inch	12
Fin Material	Aluminum
Fin Thickness	0.008"
Hand	LH
Case Material	16 ga. Galvanized
CT - top flange	1"
CB - bottom flange	1"
F- casing height	32
E - flange	1.5
D - flange	1.5
G - casing length	87
H - casing depth	10
L - over headers	5
K - over headers	N/A
T - over return bends	2.5
I - overall length	91.5
J - connection length	6

Dry Coil wt.=375

Notes:

Test psig = 315

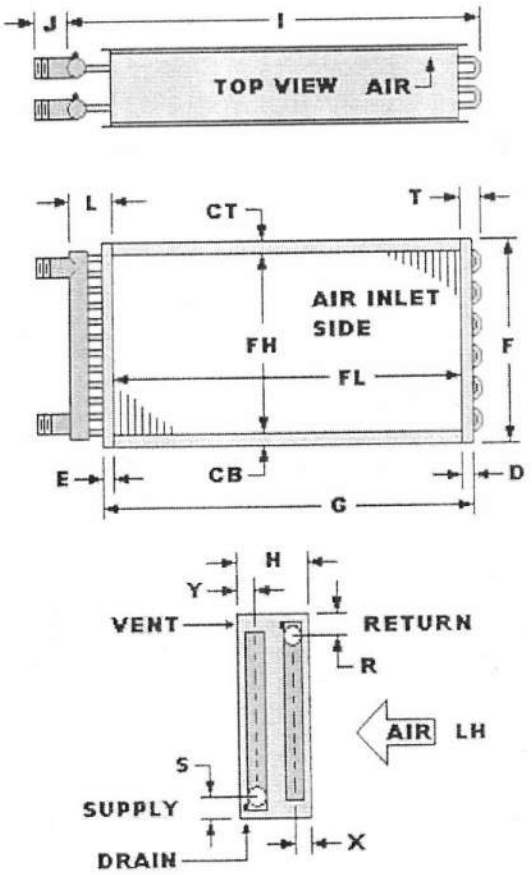
Supply - type	Sweat Copper
Supply - Size	2"
Supply header	2 1/8" o.d. Copper Header
S - supply location	2
ST - extra supply	N/A
Y - supply location	1.7525
Return - type	Sweat Copper
Return - size	2"
Return header	2 1/8" o.d. Copper Header
R - return location	2
RB - extra return	N/A
X - return location	1.7525
Left header offset	No Move
Right header offset	No Move
Vent & drain	1/8" FPT/RB
Return bend wall	0.028"

Order Verification

Order No.:T000003407

Temtrol

Line	Ship Date	Qty	Item	Due Date Type	Each Price	Net Amount
7	09/18/2009	1	LOOSE COIL 5WC8 -48 x109 x6 -12A -LH. .LA AHU-6 O/A	Standard	3,338.00	3,338.00



Tube Size o.d.	5/8"
Tube Wall	.020" copper
Application	WATER COIL
Passes	8
Fin Height	48
Fin Length	109
Rows	6
Fins Per Inch	12
Fin Material	Aluminum
Fin Thickness	0.008"
Hand	LH
Case Material	16 ga. Galvanized
CT - top flange	1"
CB - bottom flange	1"
F- casing height	50
E - flange	1.5
D - flange	1.5
G - casing length	112
H - casing depth	10
L - over headers	5.5
K - over headers	N/A
T - over return bends	2.5
I - overall length	117
J - connection length	6

Dry Coil wt.=728

Notes:

Test psig = 315

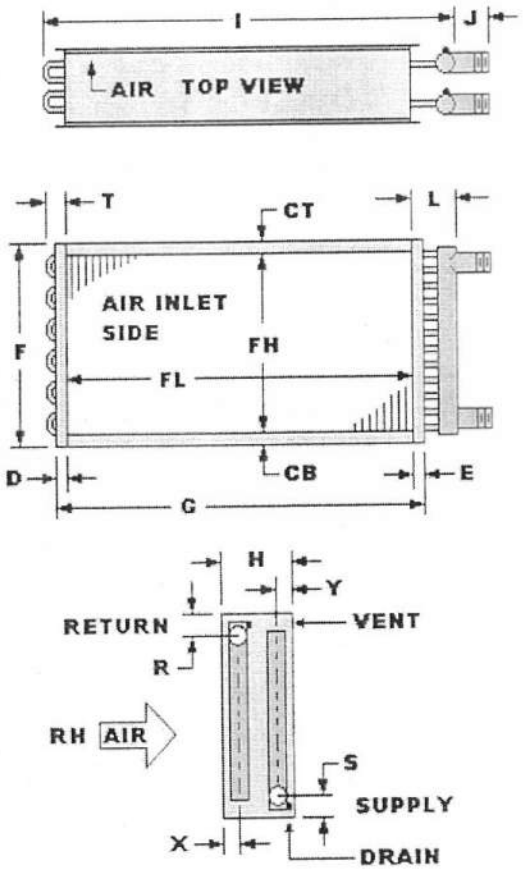
Supply - type	Sweat Copper
Supply - Size	2 1/2"
Supply header	2 5/8" o.d. Copper Header
S - supply location	2.25
ST - extra supply	N/A
Y - supply location	1.7525
Return - type	Sweat Copper
Return - size	2 1/2"
Return header	2 5/8" o.d. Copper Header
R - return location	2.25
RB - extra return	N/A
X - return location	1.7525
Left header offset	No Move
Right header offset	No Move
Vent & drain	1/8" FPT/RB
Return bend wall	0.028"

Order Verification

Order No.:T000003407

Temtrol

Line	Ship Date	Qty	Item	Due Date Type	Each Price	Net Amount
8	09/18/2009	1	LOOSE COIL 5WC8 -60 x70 x6 -12A -RH. .LA AHU-6 EXH	Standard	3,022.00	3,022.00



Tube Size o.d.	5/8"
Tube Wall	.020" copper
Application	WATER COIL
Passes	8
Fin Height	60
Fin Length	70
Rows	6
Fins Per Inch	12
Fin Material	Aluminum
Fin Thickness	0.008"
Hand	RH
Case Material	16 ga. Galvanized
CT - top flange	1"
CB - bottom flange	1"
F- casing height	62
E - flange	1.5
D - flange	1.5
G - casing length	73
H - casing depth	10
L - over headers	5.5
K - over headers	N/A
T - over return bends	2.5
I - overall length	78
J - connection length	6

Dry Coil wt.=591

Notes:

Test psig = 315

Supply - type	Sweat Copper
Supply - Size	2 1/2"
Supply header	2 5/8" o.d. Copper Header
S - supply location	2.25
ST - extra supply	N/A
Y - supply location	1.7525
Return - type	Sweat Copper
Return - size	2 1/2"
Return header	2 5/8" o.d. Copper Header
R - return location	2.25
RB - extra return	N/A
X - return location	1.7525
Left header offset	No Move
Right header offset	No Move
Vent & drain	1/8" FPT/RB
Return bend wall	0.028"

SUBMITTAL DATA

for

Xavier University Qatara

Sold to

Prepared for

{Insert your text here…}

Job Number: SLUH3J	Customer PO#:

Prepared by

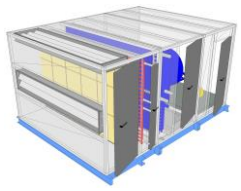
{Insert your text here…}

9/30/2022

Table of Contents

Technical Data Sheet for AHU-3

Job Information	Technical Data Sheet
Job Name	Xavier University Qatara
Date	September 30 2022
Submitted By	KH
Software Version	13.00
Unit Tag	AHU-3



Unit Overview

Model Number	Supply					
	Air Volume cfm	Static Pressure		External Dimensions		
		External inWc	Total inWc	Height in	Width in	Length in
CAH053GDDM	21000	2.00	3.22	80*	120*	160

**Not including base rails, coil connectors, drain connectors and control boxes.*

Unit

Model Number:	CAH053GDDM		
Approval:	ETL Listed / ETL Listed to Canadian Safety Standards (ETL Label / ETLc Label)		
Outer Panel:	24 gauge G90 Galvanized Steel (unpainted)		
Liner:	24 gauge Galvanized Steel (unless noted per section)		
Insulation:	R-13 Injected Foam		
Unit Configuration:	Inline horizontal	**Drive (Handling) Location:**	Right
Base:	6" formed channel	**Wall Thickness:**	2 in
Altitude:	0 ft	**Parts Warranty:**	Standard One Year

Mixing Box

Component: 1 | Length: 34 in | Shipping Section: 1

Portion	Damper					Blade Action	Rated CFM	Air Pressure Drop	Quantity
	Size (length x width)		Location	Type	Actuation				
	Overall	Opening							
Outside Air	20 in x 116 in	16 in x 106 in	End	UltraSeal Low Leak	NA	Parallel	10500 cfm	0.07 insWg	1
Return Air	26 in x 116 in	22 in x 106 in	Top	UltraSeal Low Leak	NA	Parallel	15750 cfm		1

Filter Data

Type	Efficiency	Face Velocity	Face Area	Air Volume	Filter Loading
Pleated	MERV 8	371 ft/min	56.6 ft²	21000 cfm	Side

Air Pressure Drop				Number of Filters	Height	Width	Depth
Clean Air	Mean Air	Dirty Air	User Spec				
0.15 inWc	**0.58** inWc	1.00 inWc	N/A	18	24 in	20 in	2 in

Door

Location	Width	Opening
Drive side	30 in	Outward

Technical Data Sheet for AHU-3

Hot Water Coil	Component: 2	Length: 20 in	Shipping Section: 1

Coil Model	Total Capacity	Number of Coils	Number of Rows	Fins per Inch	Tube Diameter	Tube Spacing (Face x Row)
5WH1001B	1037255 Btu/hr	2	1	10	0.625 in	1.50 in x 1.299 in

Air Volume	Air Temperature		Coil Air Pressure Drop	Finned Height	Finned Length	Face Area	Face Velocity
	Entering Dry Bulb	Leaving Dry Bulb					
21000 cfm	25.0 °F	70.2 °F	0.08 inWc	33 in	104 in	47.67 ft²	441 ft/min

Water		Flow Rate	Pressure Drop	Velocity	Volume	Weight
Entering	Leaving					
180.0 °F	159.9 °F	103.30 gpm	11.90 ftHd	5.00 ft/s	9.0 gal	77.00 lb

Connection [Data Per Coil]				Min. Fin Surface Temp.	Min. Tube Wall Surface Temp.	Fouling Factor
Type	Size	Location	Material			
Threaded	1.50 in	Drive side	Carbon steel	159.9 °F	159.9 °F	0.000

Material			
Fin	Tube	Header	Case
Aluminum .0075 in	Copper .020 in	Copper	Galv. steel

AHRI 410 Certification

Certified in accordance with the AHRI Forced-Circulation Air-Cooling and Air-Heating Coils Certification Program which is based on AHRI Standard 410 within the Range of Standard Rating Conditions listed in Table 1 of the Standard. Certified units may be found in the AHRI Directory at www.ahridirectory.org

Door

Location	Width	Opening
Drive side	8 in	Outward

Chilled Water Coil	Component: 3	Length: 54 in	Shipping Section: 2

Coil Model	Total Capacity	Sensible Capacity	Number of Coils	Number of Rows	Fins per Inch	Tube Diameter	Tube Spacing (Face x Row)
5WL1005B	729335 Btu/hr	543259 Btu/hr	2	5	10	0.625 in	1.50 in x 1.299 in

Air Volume	Air Temperature				Coil Air Pressure Drop	Finned Height	Finned Length	Face Area	Face Velocity
	Entering		Leaving						
	Dry Bulb	Wet Bulb	Dry Bulb	Wet Bulb					
21000 cfm	78.2 °F	65.2 °F	54.5 °F	53.6 °F	0.49 inWc	33 in	107 in	49.04 ft²	428 ft/min

Water		Flow Rate	Pressure Drop	Velocity	Volume	Weight
Entering	Leaving					
45.0 °F	55.3 °F	141.70 gpm	15.30 ftHd	4.60 ft/s	32.0 gal	273.00 lb

Connection [Data Per Coil]				Min. Fin Surface Temp.	Min. Tube Wall Surface Temp.	Fouling Factor
Type	Size	Location	Material			
Threaded	2.50 in	Drive side	Carbon steel	45.0 °F	45.0 °F	0.000

Material				Drain Pan	Drain Side
Fin	Tube	Header	Case		
Aluminum .0075 in	Copper .020 in	Copper	Stainless steel	Stainless steel	Drive side

AHRI 410 Certification

Certified in accordance with the AHRI Forced-Circulation Air-Cooling and Air-Heating Coils Certification Program which is based on AHRI Standard 410 within the Range of Standard Rating Conditions listed in Table 1 of the Standard. Certified units may be found in the AHRI Directory at www.ahridirectory.org

Door

Location	Width	Opening
Drive side	30 in	Outward

Technical Data Sheet for AHU-3

Supply Fan	Component: 4	Length: 52 in	Shipping Section: 3

Fan Performance

Air Volume	Static Pressure			Fan Energy Index(FEI)	Total Input Power	Fan Shaft Power	Speed		Outlet Velocity
	External	Total	Cabinet				Operating	Maximum	
21000 cfm	2.00 inWc	3.22 inWc	0.00 inWc	1.27	13.3 kW	15.94 BHP	894 rpm	1329 rpm	0 ft/min

Fan Data

Fan Type	Blade Type / Class	Quantity of Fans	Wheel Diameter	Material Type	Number of Blades	Discharge	Motor Location
Centrifugal - Plenum	Airfoil / 2	1	40.25 in	Steel	9	Axial	To Side of Fan

Motor Data

Power	Electrical Supply	Speed	Efficiency	Enclosure	Frame Size	Supplier	Number of Poles	Lock Rotor Current	Full Load Current
20.0 HP	460/60/3 V/Hz/Phase	1750 rpm	Premium	ODP	256 T frame	Generic	4	148.01 A	24.00 A

Fan Options

Isolator Type:	Spring

Drive Package Data*

Fan Sheave	Motor Sheave	Belt	Number of Belts	Actual Drive S.F.	Bearing Type
2B5V110	2B5V54	5VX1120	2	1.49	Standard - L50 (200K)

**Daikin Applied reserves the right to provide a different but equivalent drive package*

Door

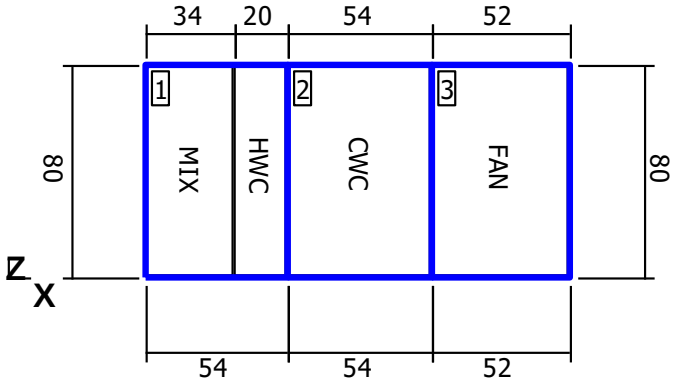
Location	Width	Opening
Drive side	26 in	Outward

Unit Sound Power (dB)

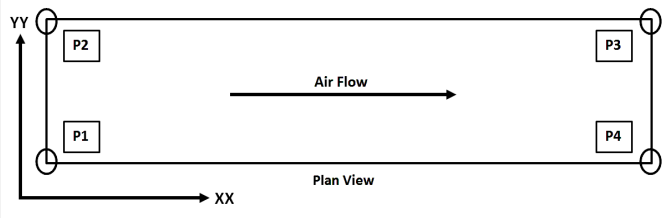
Type	63 Hz	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz
Radiated:	81	89	73	67	63	53	46	51
Unit Discharge:	91	95	90	88	85	81	75	71
Unit Return:	82	90	79	71	68	65	57	52

Shipping Section Details

Section	Length in	Weight lb	Corner Weights (lb)				Center of Gravity (in)		
			P1	P2	P3	P4	XX	YY	ZZ
1	54	1537	357	351	411	417	29	60	40
2	54	2174	751	725	336	362	17	59	38
3	52	2843	1015	692	407	730	21	46	32
Entire Unit	**160**	**6554**	**1686**	**1331**	**1591**	**1946**	**86**	**54**	**36**



Elevation View



NOTE: Special components aren't included in the corner weights and center of gravity data.

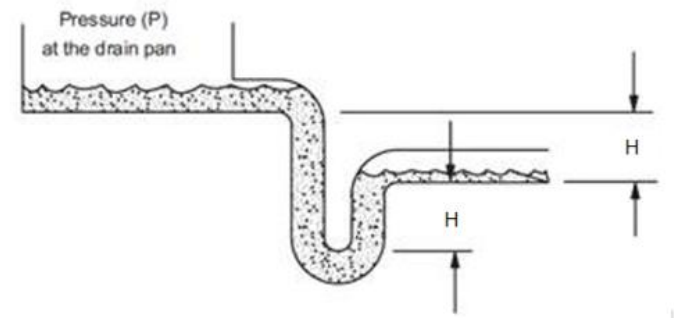
Technical Data Sheet for AHU-3

Supply Static Pressure Drop

Component	Option	Static Pressure Drop
Mixing Box	Filter	0.58 insWg
Mixing Box	Mixing Box	0.07 insWg
Hot Water Coil	Hot Water Coil	0.08 insWg
Chilled Water coil	Chilled Water coil	0.49 insWg
Supply Fan	Cabinet	
External Static	External Static	2.00 insWg
Total Supply Fan Static		3.22 insWg

Minimum Recommended Drain Pan Trap Dimensions

Shipping Section	Component	H
2	Chilled Water coil	2.94



Dimensions provided as a courtesy and are recommended minimums only. Daikin is not responsible for supplying or designing drain pan traps and is not responsible for any damage caused by incorrect trap heights. The dimensions listed above should be reviewed and approved by a licensed plumbing professional.

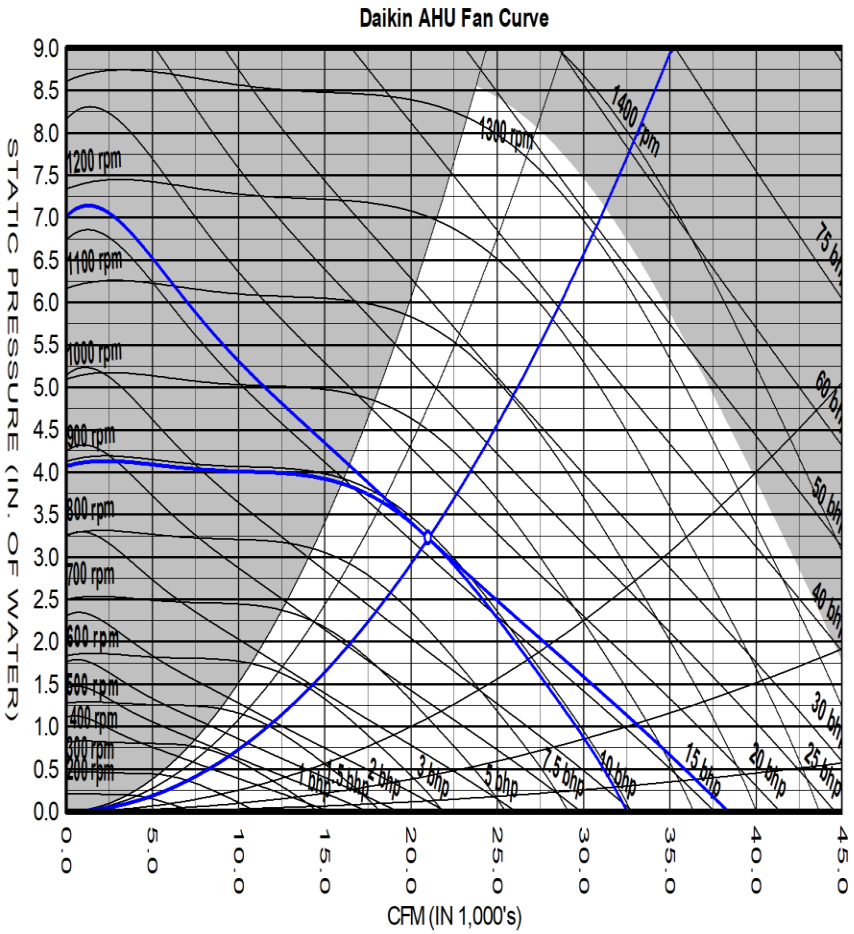
AHRI Certification

Certified in accordance with the AHRI Central Station Air-Handling Unit Certification Program, which is based on AHRI Standards 430/431. Certified units may be found in the AHRI Directory at www.ahridirectory.org.

Notes

Standard
1. As a standalone component, unit meets or exceeds requirements of ASHRAE 90.1 - 2007. The approving authority is responsible for compliance of multi - component building systems.

Fan Curve for AHU-3



40.2" Airfoil Plenum Supply Fan at Standard Conditions					
Air volume	21000	cfm	Fan speed	894	rpm
Total static	3.22	insWg	Max speed	1329	rpm
Fan Shaft Power	15.9	bhp	Efficiency	66.7	%
Fan Energy Index(FEI)	1.27				
Unit tagging	AHU-3		Date	September-30-2022	
Job name	Xavier University Qatara		Time	12:46	

Supply fan performance is certified in accordance with the Central Station Air-Handling Unit Certification Program, which is based on AHRI Standard 430.

Drawing for AHU-3

Job Number: SLUH3J
Job Name: Xavier University Qatara

Prepared Date: 9/30/2022

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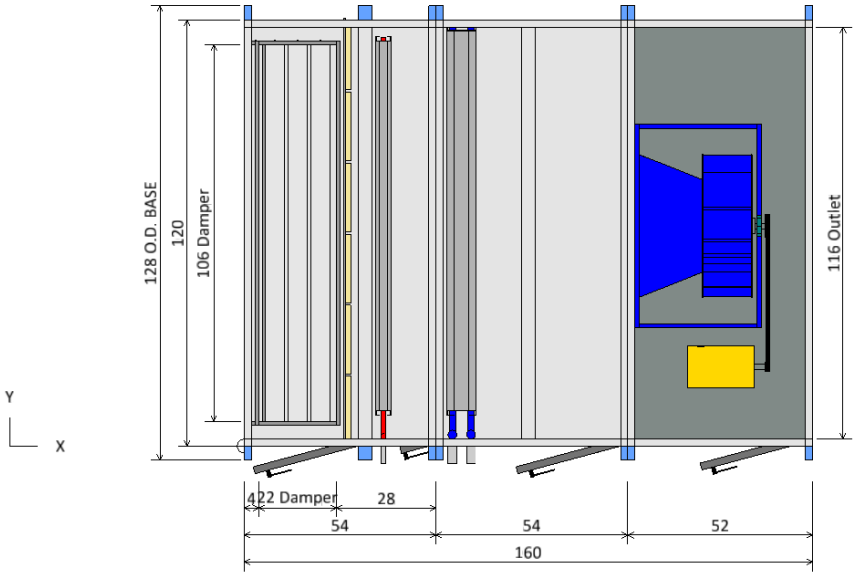
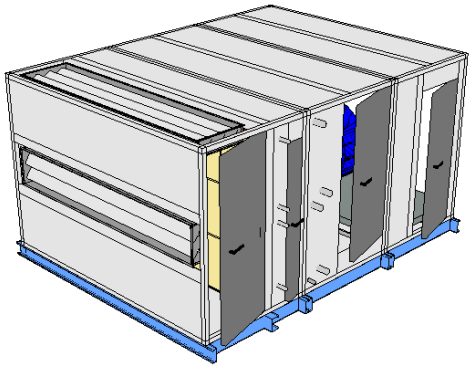
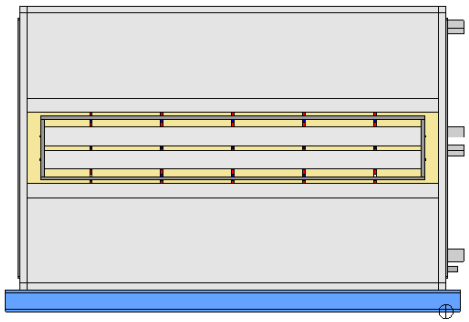
Drawing for AHU-3



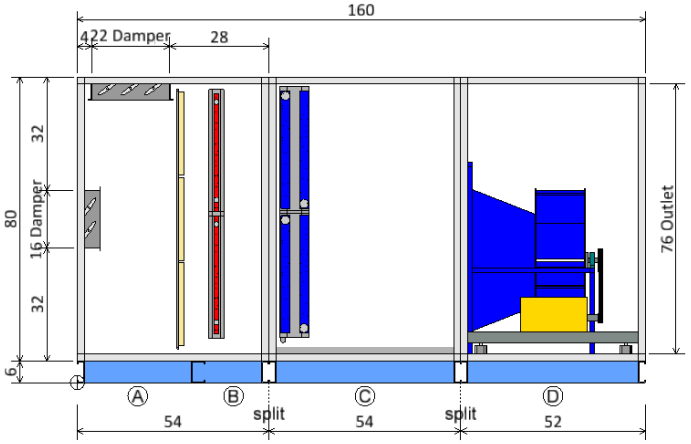
PLAN VIEW



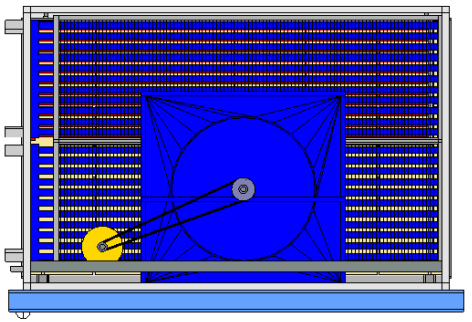
ISOMETRIC VIEW



FRONT END VIEW



ELEVATION VIEW



REAR END VIEW

Plan/Elevation	Unit Tag: AHU-3			Sales Office: Mid-South Equipment Sales and ServicKH		
Product: Vision Air Handler	Project Name: Xavier University Qatara			Sales Engineer:		
Model: CAH053GDDM	Sept. 30, 2022	Ver/Rev:	Sheet: 1 of 1	Scale: NTS	Tolerance: +/-0.25"	Dwg Units: in

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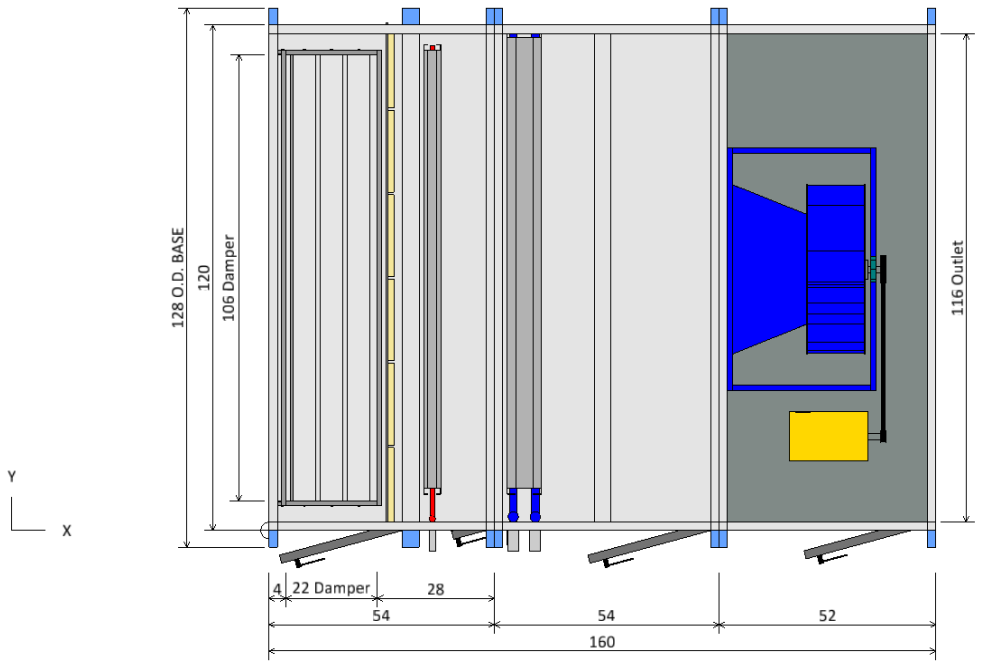
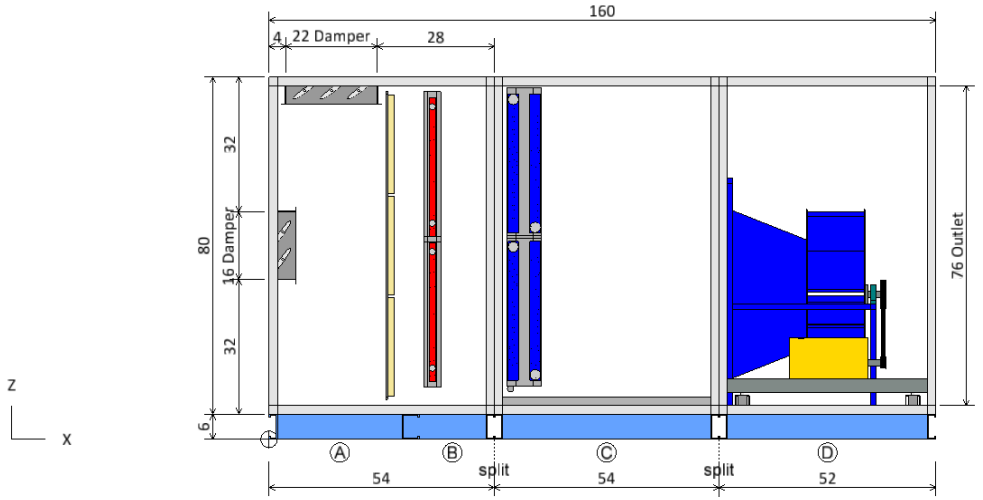
Drawing for AHU-3



PLAN VIEW



ELEVATION VIEW

Component Key		
Ⓐ	Mixing Box	
	Filter Type:	PerfectPleat HC M8
	Right Door (WxH):	30 ins x 76 ins
Ⓑ	Hot Water Coil	
	Coil Model:	5WH1001B
	Total Capacity:	1037255.0 Btu/hr
	Right Door (WxH):	8 ins x 68 ins
Ⓒ	Chilled Water coil	
	Coil Model:	5WL1005B
	Total Capacity:	729335.0 Btu/hr
	Right Door (WxH):	30 ins x 68 ins
Ⓓ	Supply Fan	
	Fan Type:	Centrifugal - Plenum
	Fan Size (Class):	40 (2)
	Air Flowrate:	21000.0 cfm
	T.S.P:	3.2 insWg
	Motor Power:	20.0 HP
	Right Door (WxH):	26 ins x 68 ins

Plan/Elevation - No Ends	Unit Tag: AHU-3			Sales Office: Mid-South Equipment Sales and ServicKH		
Product: Vision Air Handler	Project Name: Xavier University Qatara			Sales Engineer:		
Model: CAH053GDDM	Sept. 30, 2022	Ver/Rev:	Sheet: 1 of 1	Scale: NTS	Tolerance: +/-0.25"	Dwg Units: in

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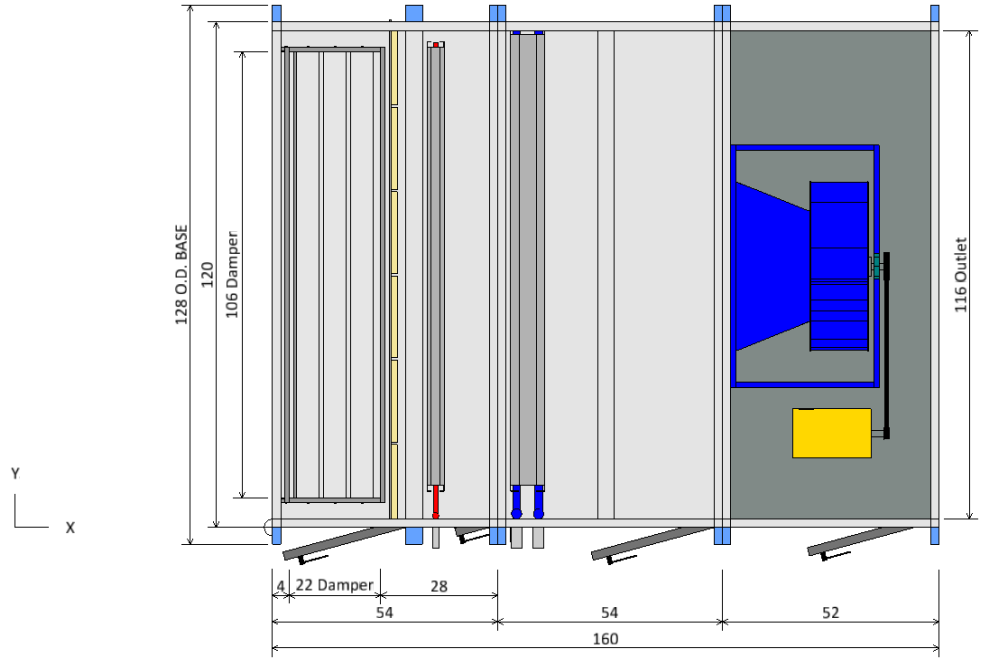
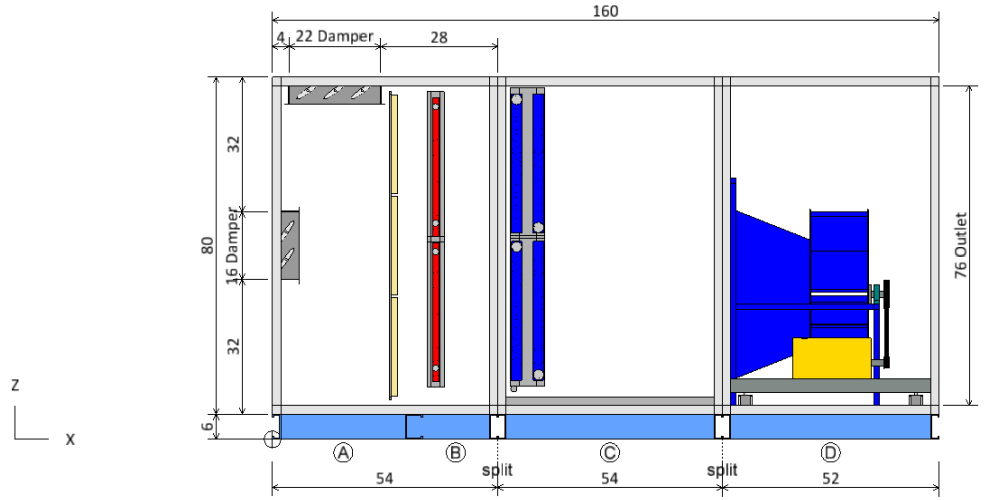
Job Number: SLUH3J
Job Name: Xavier University Qatara

Prepared Date: 9/30/2022

Drawing for AHU-3



PLAN VIEW



ELEVATION VIEW

Component Key

	Type	X	Y	Z	Wid	Hgt
Ⓐ	Mixing Box Outside air damper Return air damper	 0.00 4.00	 7.00 7.00	 38.00 86.00	 106.00 106.00	 16.00 22.00
Ⓓ	Supply Fan Fan Discharge	 160.00	 2.00	 8.00	 116.00	 76.00

Note: Dimensions are measured from the origin point.

Opening/Damper Connections	Unit Tag: AHU-3			Sales Office: Mid-South Equipment Sales and ServicKH		
Product: Vision Air Handler	Project Name: Xavier University Qatara			Sales Engineer:		
Model: CAH053GDDM	Sept. 30, 2022	Ver/Rev:	Sheet: 1 of 1	Scale: NTS	Tolerance: +/-0.25"	Dwg Units: in

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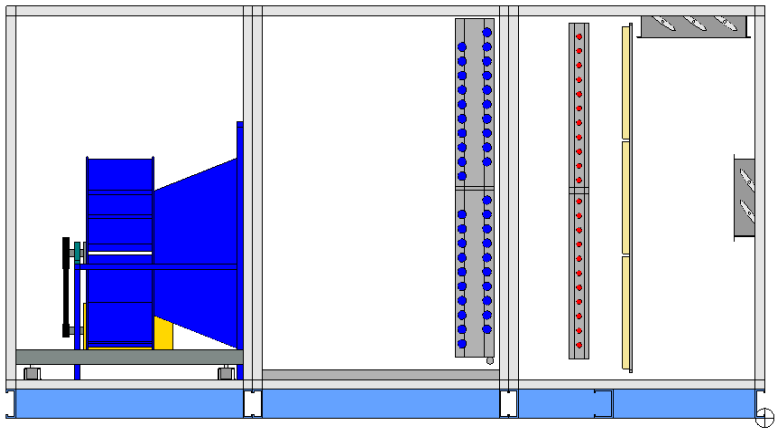
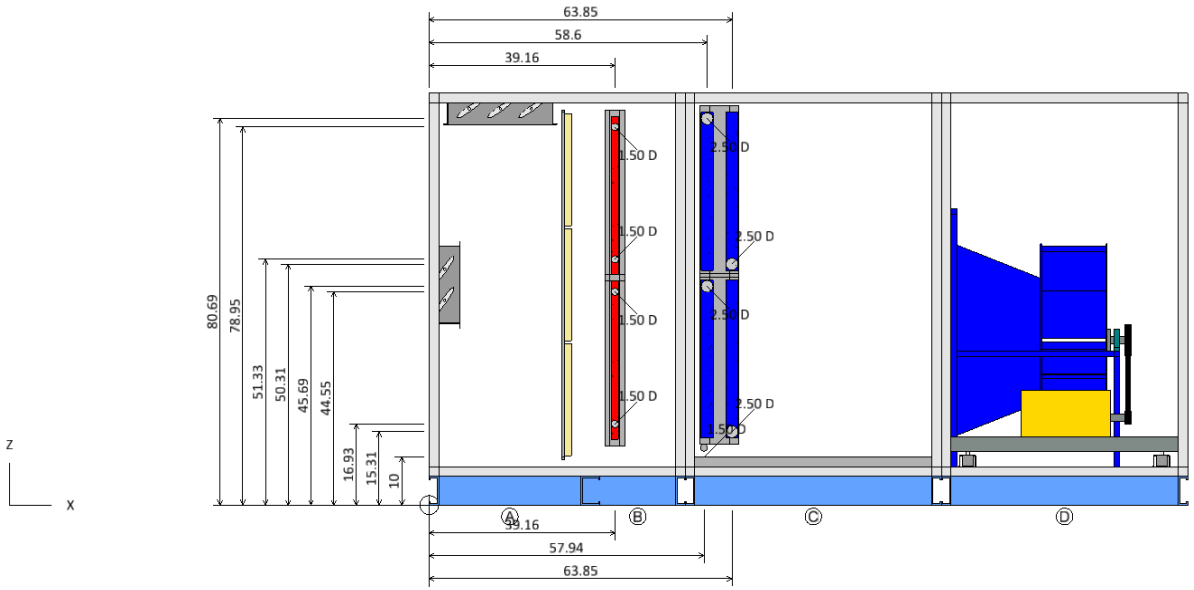
Drawing for AHU-3



LEFT ELEVATION VIEW



RIGHT ELEVATION VIEW

Coil and Drain Connections

	Type	X	Y	Z	Diam
Ⓑ	Hot Water Coil				
	Hot water inlet:	39.16	-7.00	16.93	1.50
	Hot water outlet:	39.16	-7.00	44.55	1.50
	Hot water inlet:	39.16	-7.00	51.33	1.50
	Hot water outlet:	39.16	-7.00	78.95	1.50
Ⓒ	Chilled Water coil				
	Condensate drain conn:	57.94	-5.40	12.00	1.50
	Cold water inlet:	63.85	-7.00	15.31	2.50
	Cold water outlet:	58.60	-7.00	45.69	2.50
	Cold water inlet:	63.85	-7.00	50.31	2.50
	Cold water outlet:	58.60	-7.00	80.69	2.50

Note: Dimensions are measured from the origin point.

Coil and Drain Connections	Unit Tag: AHU-3			Sales Office: Mid-South Equipment Sales and ServicKH		
Product: Vision Air Handler	Project Name: Xavier University Qatara			Sales Engineer:		
Model: CAH053GDDM	Sept. 30, 2022	Ver/Rev:	Sheet: 1 of 1	Scale: NTS	Tolerance: +/-0.25"	Dwg Units: in

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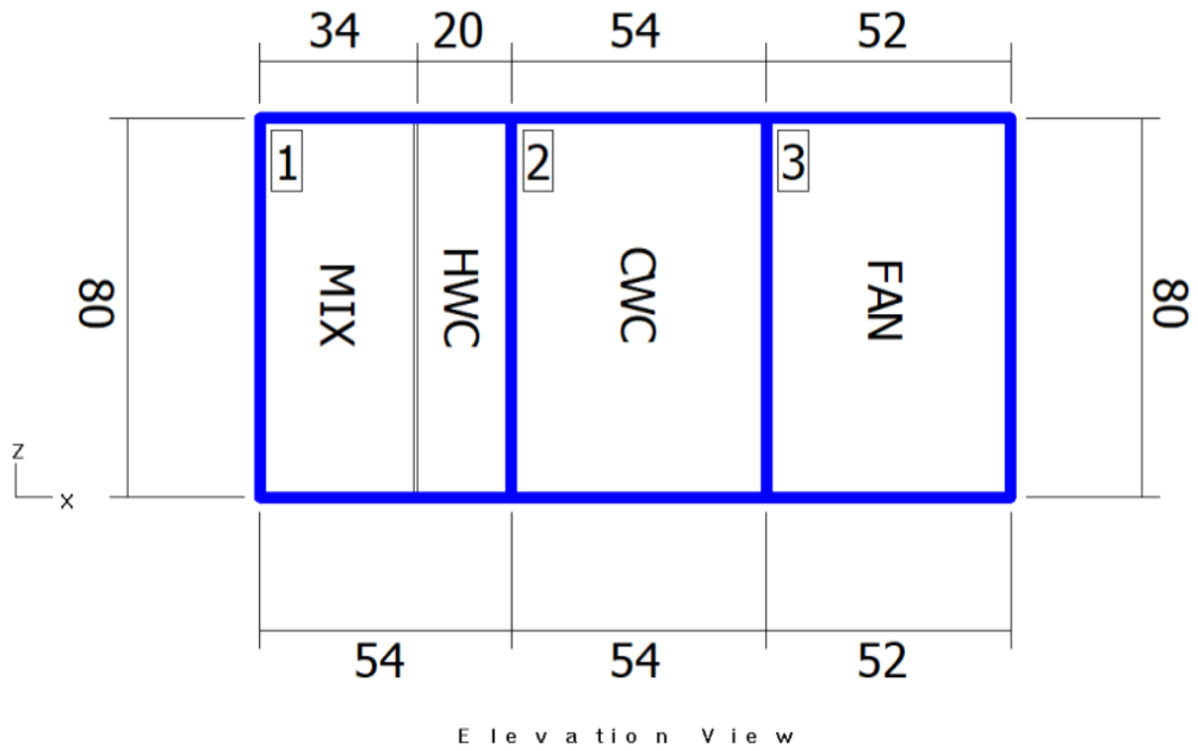

Elevation View

Shipping Sections				
Section	Weight (lb)	X	Y	Z
Section 1	1536.86	54	120	80
Section 2	2173.63	54	120	80
Section 3	2842.86	52	120	80
Total Unit	6553.36	160	120	80

Note: Base rails, curb ready base, coil connectors, drain connectors, and control boxes not included in height X, Y, Z dimensions.
Shipping section may be 2" longer in air flow direction due to internal splice joint.

Shipping Sections	Unit Tag: AHU-3			Sales Office: Mid-South Equipment Sales and ServicKH		
Product: Vision Air Handler	Project Name: Xavier University Qatara			Sales Engineer:		
Model: CAH053GDDM	Sept. 30, 2022	Ver/Rev:	Sheet: 1 of 1	Scale: NTS	Tolerance: +/-0.25"	Dwg Units: in

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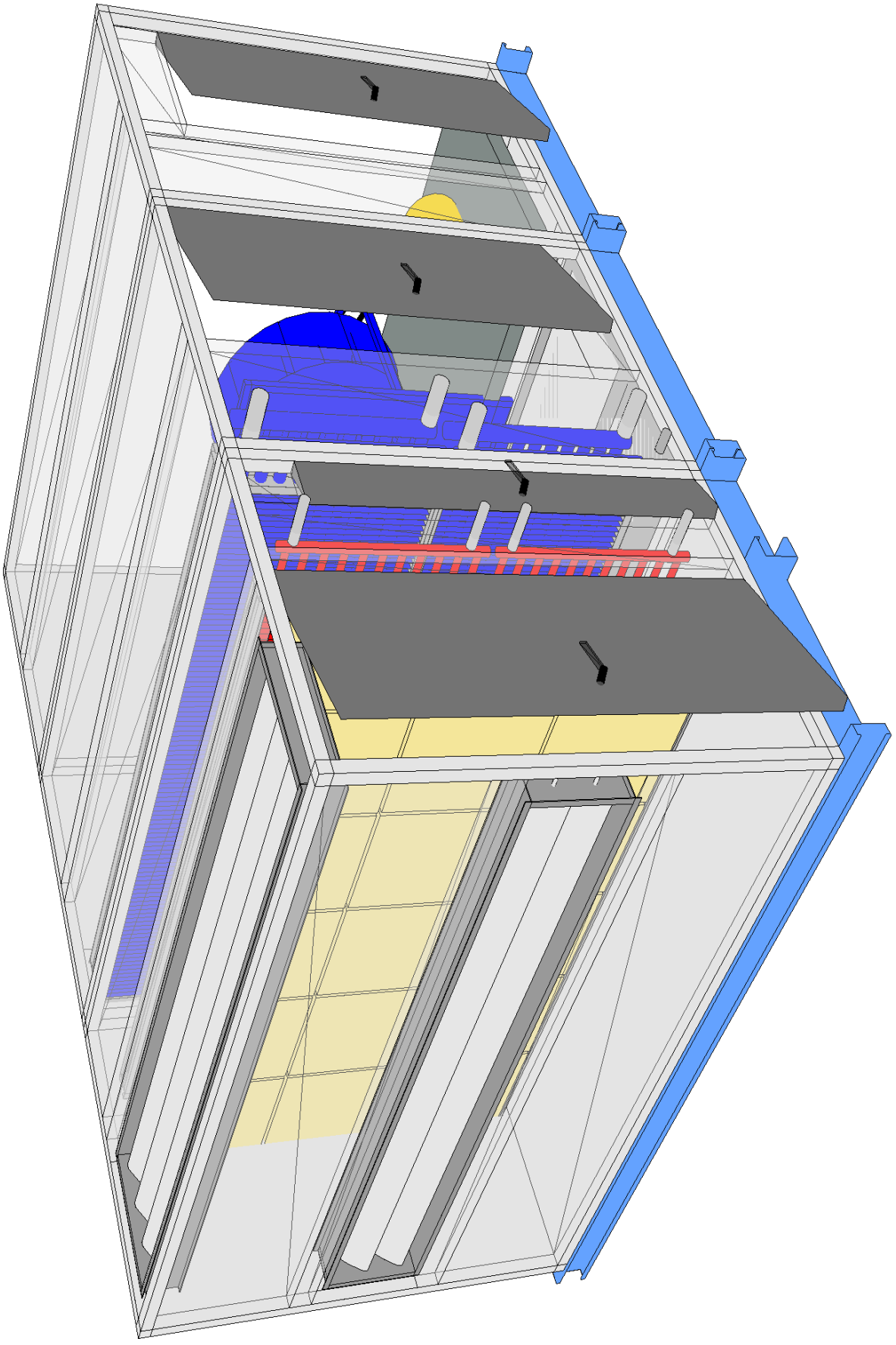
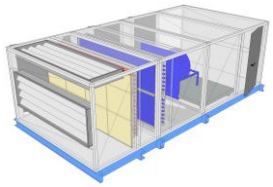
Drawing for AHU-3



Product Drawing	Unit Tag: AHU-3	Sales Office: Mid-South Equipment Sales and ServicKH	DAIKIN 13600 Industrial Park Blvd, Minneapolis, MN 55441 www.DaikinApplied.com Software Version: 13.00
Product: Vision Air Handler	Project Name: Xavier University Qatara	Sales Engineer:	
Model: CAH053GDDM	Sept. 30, 2022 | Ver/Rev: | Sheet: 1 of 1	Scale: NTS | Tolerance: +/-0.25" | Dwg Units: in	

Technical Data Sheet for AHU-4

Job Information	Technical Data Sheet
Job Name	Xavier University Qatara
Date	September 30 2022
Submitted By	KH
Software Version	13.00
Unit Tag	AHU-4



Unit Overview

Model Number	Supply					
	Air Volume cfm	Static Pressure		External Dimensions		
		External inWc	Total inWc	Height in	Width in	Length in
CAH031GDDM	14365	2.00	4.21	60*	98*	202

**Not including base rails, coil connectors, drain connectors and control boxes.*

Unit

Model Number:	CAH031GDDM		
Approval:	ETL Listed / ETL Listed to Canadian Safety Standards (ETL Label / ETLc Label)		
Outer Panel:	24 gauge G90 Galvanized Steel (unpainted)		
Liner:	24 gauge Galvanized Steel (unless noted per section)		
Insulation:	R-13 Injected Foam		
Unit Configuration:	Inline horizontal	**Drive (Handling) Location:**	Left
Base:	6" formed channel	**Wall Thickness:**	2 in
Altitude:	0 ft	**Parts Warranty:**	Standard One Year

Mixing Box

Component: 1 | Length: 38 in | Shipping Section: 1

Portion	Damper					Blade Action	Rated CFM	Air Pressure Drop	Quantity
	Size (length x width)		Location	Type	Actuation				
	Overall	Opening							
Outside Air	30 in x 94 in	26 in x 84 in	End	UltraSeal Low Leak	NA	Parallel	14365 cfm	0.06 insWg	1
Return Air	30 in x 94 in	26 in x 84 in	Top	UltraSeal Low Leak	NA	Parallel	14365 cfm		1

Filter Data

Type	Efficiency	Face Velocity	Face Area	Air Volume	Filter Loading
Pleated	MERV 8	439 ft/min	32.7 ft²	14365 cfm	Side

Air Pressure Drop				Number of Filters	Height	Width	Depth
Clean Air	Mean Air	Dirty Air	User Spec				
0.19 inWc	**0.60** inWc	1.00 inWc	N/A	8	20 in	24 in	2 in
				4	12 in	24 in	2 in

Door

Location	Width	Opening
Drive side	30 in	Outward

Technical Data Sheet for AHU-4

Hot Water Coil	Component: 2	Length: 20 in	Shipping Section: 1

Coil Model	Total Capacity	Number of Coils	Number of Rows	Fins per Inch	Tube Diameter	Tube Spacing (Face x Row)
5WB1101C	546203 Btu/hr	2	1	11	0.625 in	3.00 in x 1.299 in

Air Volume	Air Temperature		Coil Air Pressure Drop	Finned Height	Finned Length	Face Area	Face Velocity
	Entering Dry Bulb	Leaving Dry Bulb					
14365 cfm	25.0 °F	59.8 °F	0.19 inWc	24 in	82 in	27.33 ft²	526 ft/min

Water		Flow Rate	Pressure Drop	Velocity	Volume	Weight
Entering	Leaving					
180.0 °F	162.2 °F	61.50 gpm	11.10 ftHd	8.20 ft/s	4.0 gal	36.00 lb

Connection [Data Per Coil]				Min. Fin Surface Temp.	Min. Tube Wall Surface Temp.	Fouling Factor
Type	Size	Location	Material			
Threaded	1.50 in	Drive side	Carbon steel	162.2 °F	162.2 °F	0.000

Material			
Fin	Tube	Header	Case
Aluminum .0075 in	Copper .020 in	Copper	Galv. steel

AHRI 410 Certification

Coil is outside of the scope of AHRI Standard 410

Door

Location	Width	Opening
Drive side	8 in	Outward

Chilled Water Coil	Component: 3	Length: 54 in	Shipping Section: 2

Coil Model	Total Capacity	Sensible Capacity	Number of Coils	Number of Rows	Fins per Inch	Tube Diameter	Tube Spacing (Face x Row)
5WS1006C	631925 Btu/hr	415142 Btu/hr	2	6	10	0.625 in	1.50 in x 1.299 in

Air Volume	Air Temperature				Coil Air Pressure Drop	Finned Height	Finned Length	Face Area	Face Velocity
	Entering		Leaving						
	Dry Bulb	Wet Bulb	Dry Bulb	Wet Bulb					
14365 cfm	78.9 °F	66.8 °F	52.5 °F	52.3 °F	1.23 inWc	24 in	85 in	28.33 ft²	507 ft/min

Water		Flow Rate	Pressure Drop	Velocity	Volume	Weight
Entering	Leaving					
45.0 °F	54.1 °F	138.90 gpm	13.10 ftHd	4.70 ft/s	22.0 gal	191.00 lb

Connection [Data Per Coil]				Min. Fin Surface Temp.	Min. Tube Wall Surface Temp.	Fouling Factor
Type	Size	Location	Material			
Threaded	2.00 in	Drive side	Carbon steel	45.0 °F	45.0 °F	0.000

Material				Drain Pan	Drain Side
Fin	Tube	Header	Case		
Aluminum .0075 in	Copper .020 in	Copper	Stainless steel	Stainless steel	Drive side

AHRI 410 Certification

Certified in accordance with the AHRI Forced-Circulation Air-Cooling and Air-Heating Coils Certification Program which is based on AHRI Standard 410 within the Range of Standard Rating Conditions listed in Table 1 of the Standard. Certified units may be found in the AHRI Directory at www.ahridirectory.org

Door

Location	Width	Opening
Drive side	30 in	Outward

Technical Data Sheet for AHU-4

Supply Fan	Component: 4	Length: 48 in	Shipping Section: 3

Fan Performance

Air Volume	Static Pressure			Fan Energy Index(FEI)	Total Input Power	Fan Shaft Power	Speed		Outlet Velocity
	External	Total	Cabinet				Operating	Maximum	
14365 cfm	2.00 inWc	4.21 inWc	0.00 inWc	1.32	11.3 kW	13.51 BHP	1368 rpm	1783 rpm	0 ft/min

Fan Data

Fan Type	Blade Type / Class	Quantity of Fans	Wheel Diameter	Material Type	Number of Blades	Discharge	Motor Location
Centrifugal - Plenum	Airfoil / 2	1	30.00 in	Steel	9	Axial	To Side of Fan

Motor Data

Power	Electrical Supply	Speed	Efficiency	Enclosure	Frame Size	Supplier	Number of Poles	Lock Rotor Current	Full Load Current
20.0 HP	460/60/3 V/Hz/Phase	1750 rpm	Premium	ODP	256 T frame	Generic	4	148.01 A	24.00 A

Fan Options

Isolator Type:	Spring

Drive Package Data*

Fan Sheave	Motor Sheave	Belt	Number of Belts	Actual Drive S.F.	Bearing Type
2B5V68	2B5V54	5VX860	2	1.38	Standard - L50 (200K)

**Daikin Applied reserves the right to provide a different but equivalent drive package*

Door

Location	Width	Opening
Drive side	30 in	Outward

Plenum Section	Component: 5	Length: 42 in	Shipping Section: 3

Opening Location	Opening Size	Air Pressure Drop
Drive side	56.00" x 38.00"	0.13 inWc

Door

Location	Width	Opening
Non-drive side	30 in	Outward

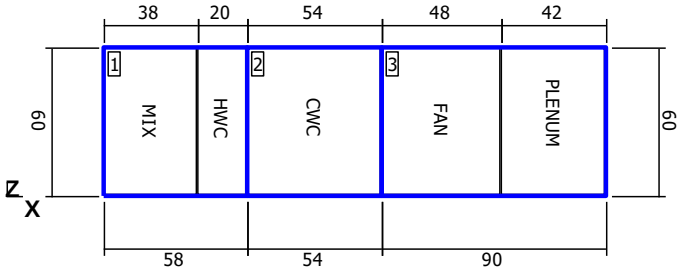
Unit Sound Power (dB)

Type	63 Hz	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz
Radiated:	80	79	83	67	63	54	46	51
Unit Discharge:	85	84	90	82	79	76	73	67
Unit Return:	80	79	89	68	66	64	58	54

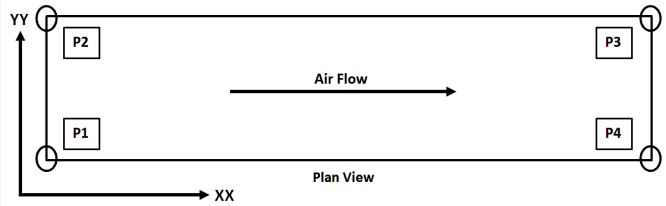
Technical Data Sheet for AHU-4

Shipping Section Details

Section	Length in	Weight lb	Corner Weights (lb)				Center of Gravity (in)		
			P1	P2	P3	P4	XX	YY	ZZ
1	58	1166	272	276	311	307	31	49	31
2	54	1645	533	556	289	266	18	50	30
3	90	2126	836	598	227	465	29	38	27
Entire Unit	**202**	**4937**	**1432**	**1220**	**1037**	**1248**	**93**	**45**	**29**



Elevation View



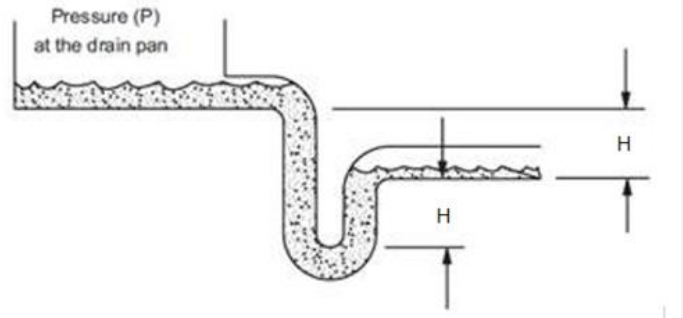
NOTE: Special components aren't included in the corner weights and center of gravity data.

Supply Static Pressure Drop

Component	Option	Static Pressure Drop
Mixing Box	Filter	0.60 insWg
Mixing Box	Mixing Box	0.07 insWg
Hot Water Coil	Hot Water Coil	0.19 insWg
Chilled Water coil	Chilled Water coil	1.23 insWg
Supply Fan	Cabinet	
Plenum Section	Plenum Section	0.13 insWg
External Static	External Static	2.00 insWg
Total Supply Fan Static		4.21 insWg

Minimum Recommended Drain Pan Trap Dimensions

Shipping Section	Component	H
2	Chilled Water coil	4.66



Dimensions provided as a courtesy and are recommended minimums only. Daikin is not responsible for supplying or designing drain pan traps and is not responsible for any damage caused by incorrect trap heights. The dimensions listed above should be reviewed and approved by a licensed plumbing professional.

Technical Data Sheet for AHU-4

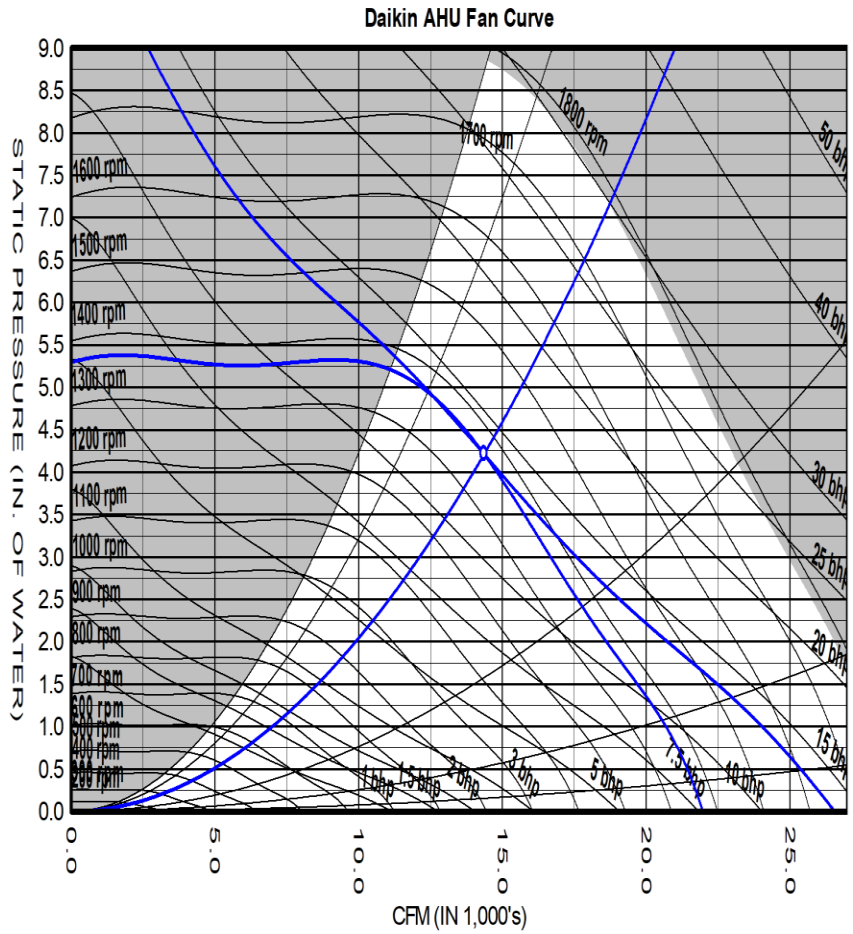
AHRI Certification

Certified in accordance with the AHRI Central Station Air-Handling Unit Certification Program, which is based on AHRI Standards 430/431. Certified units may be found in the AHRI Directory at www.ahridirectory.org.

Notes

Standard
1. As a standalone component, unit meets or exceeds requirements of ASHRAE 90.1 - 2007. The approving authority is responsible for compliance of multi - component building systems.

Fan Curve for AHU-4



30.0" Airfoil Plenum Supply Fan at Standard Conditions					
Air volume	14365	cfm	Fan speed	1368	rpm
Total static	4.21	insWg	Max speed	1783	rpm
Fan Shaft Power	13.5	bhp	Efficiency	70.5	%
Fan Energy Index(FEI)	1.32				
Unit tagging	AHU-4		Date	September-30-2022	
Job name	Xavier University Qatara		Time	12:46	

Supply fan performance is certified in accordance with the Central Station Air-Handling Unit Certification Program, which is based on AHRI Standard 430.

Drawing for AHU-4

Job Number: SLUH3J
Job Name: Xavier University Qatara

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Prepared Date: 9/30/2022

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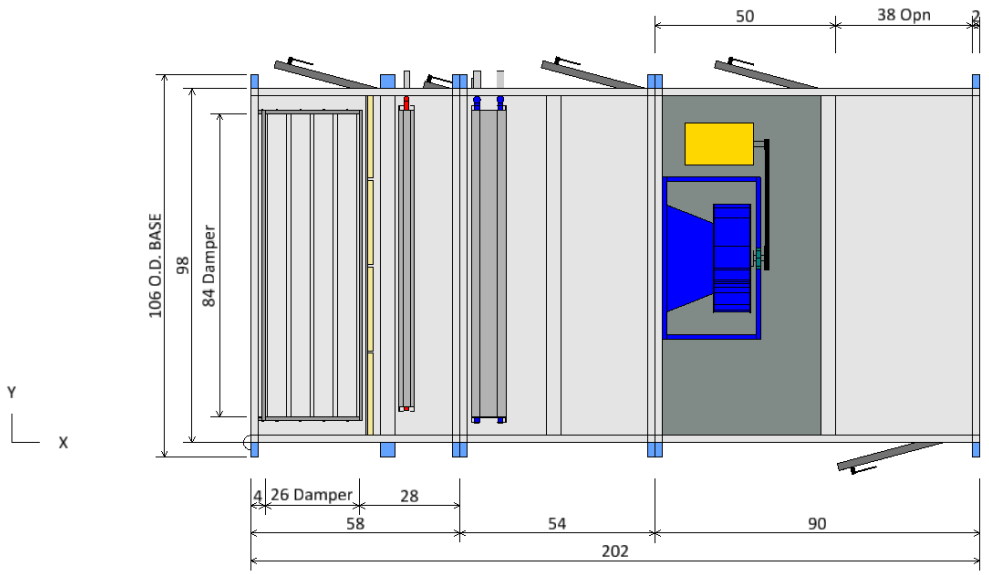
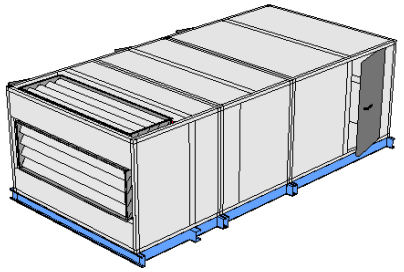
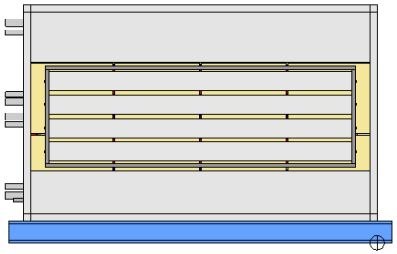
Drawing for AHU-4



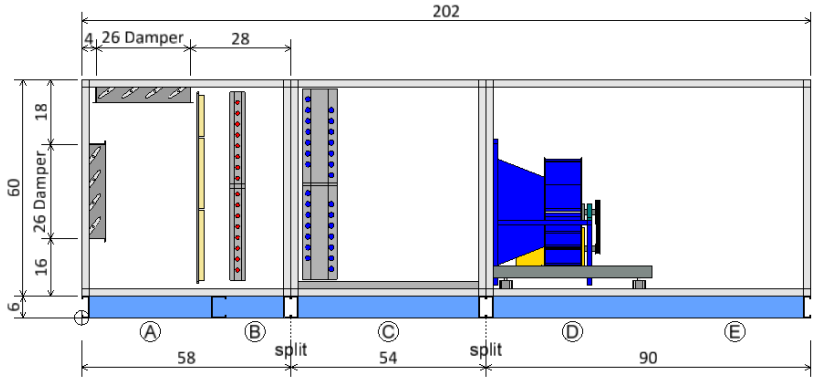
PLAN VIEW



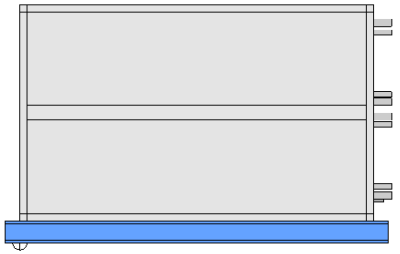
ISOMETRIC VIEW



FRONT END VIEW



ELEVATION VIEW



REAR END VIEW

Plan/Elevation	Unit Tag: AHU-4			Sales Office: Mid-South Equipment Sales and ServicKH		
Product: Vision Air Handler	Project Name: Xavier University Qatara			Sales Engineer:		
Model: CAH031GDDM	Sept. 30, 2022	Ver/Rev:	Sheet: 1 of 1	Scale: NTS	Tolerance: +/-0.25"	Dwg Units: in

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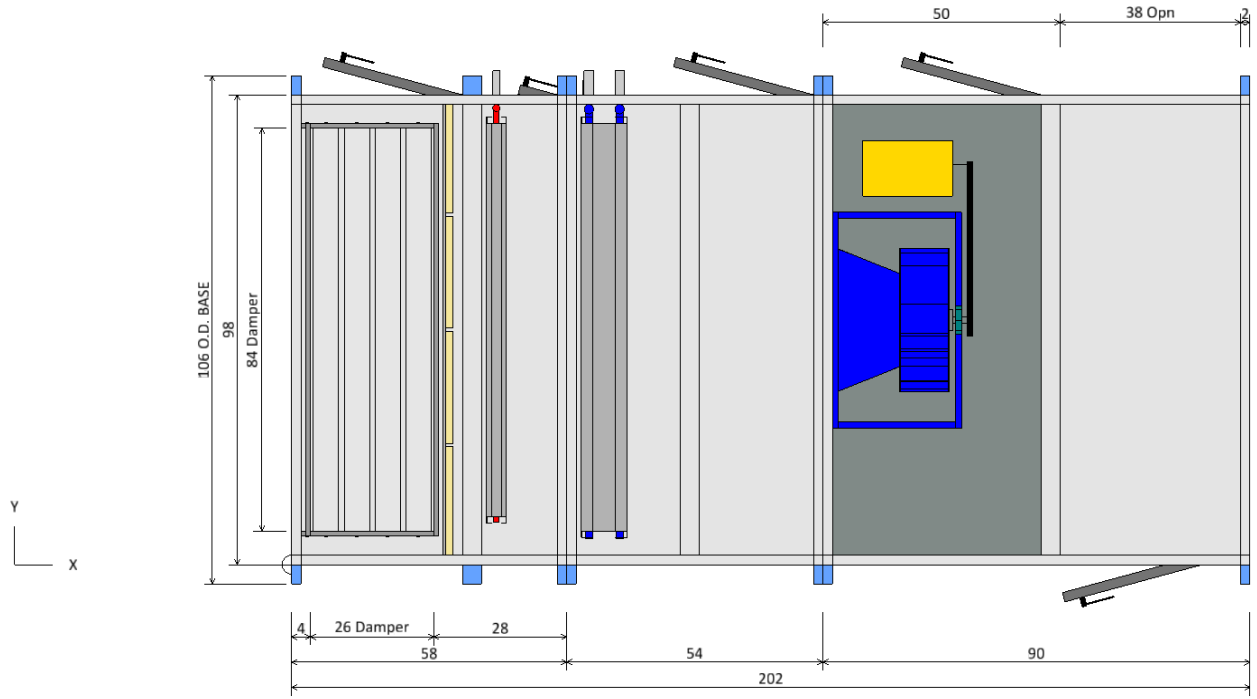
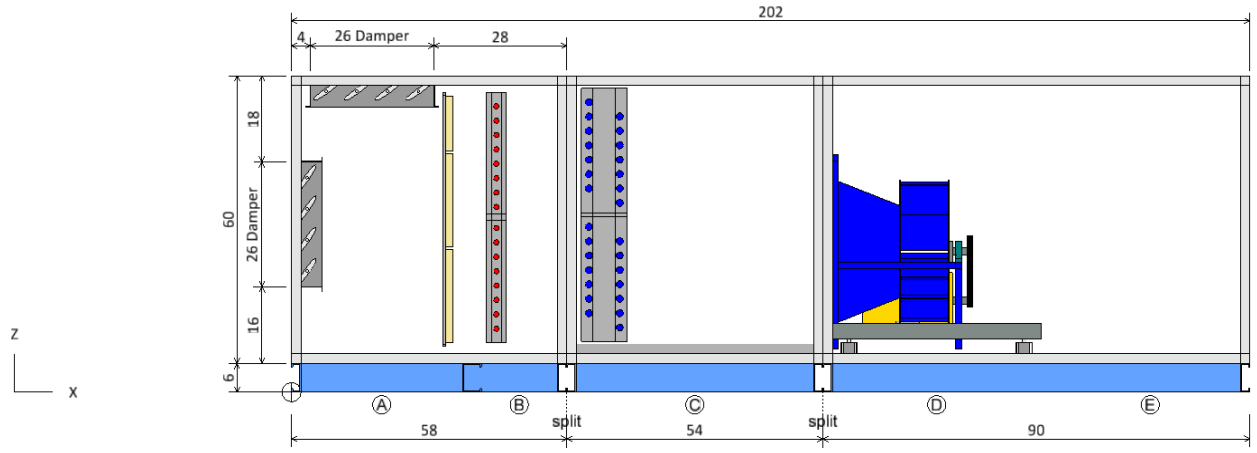
Drawing for AHU-4



PLAN VIEW



ELEVATION VIEW

Component Key		
Ⓐ	Mixing Box	
	Filter Type:	PerfectPleat HC M8
	Left Door (WxH):	30 ins x 56 ins
Ⓑ	Hot Water Coil	
	Coil Model:	5WB1101C
	Total Capacity:	546203.0 Btu/hr
	Left Door (WxH):	8 ins x 56 ins
Ⓒ	Chilled Water coil	
	Coil Model:	5WS1006C
	Total Capacity:	631925.0 Btu/hr
	Left Door (WxH):	30 ins x 50 ins
Ⓓ	Supply Fan	
	Fan Type:	Centrifugal - Plenum
	Fan Size (Class):	30 (2)
	Air Flowrate:	14365.0 cfm
	T.S.P:	4.2 insWg
	Motor Power:	20.0 HP
	Left Door (WxH):	30 ins x 56 ins
Ⓔ	Plenum Section	
	Opening Location:	Drive side
	Opening Size:	56 ins x 38 ins
	Right Door (WxH):	30 ins x 56 ins

Plan/Elevation - No Ends	Unit Tag: AHU-4			Sales Office: Mid-South Equipment Sales and ServicKH		
Product: Vision Air Handler	Project Name: Xavier University Qatara			Sales Engineer:		
Model: CAH031GDDM	Sept. 30, 2022	Ver/Rev:	Sheet: 1 of 1	Scale: NTS	Tolerance: +/-0.25"	Dwg Units: in

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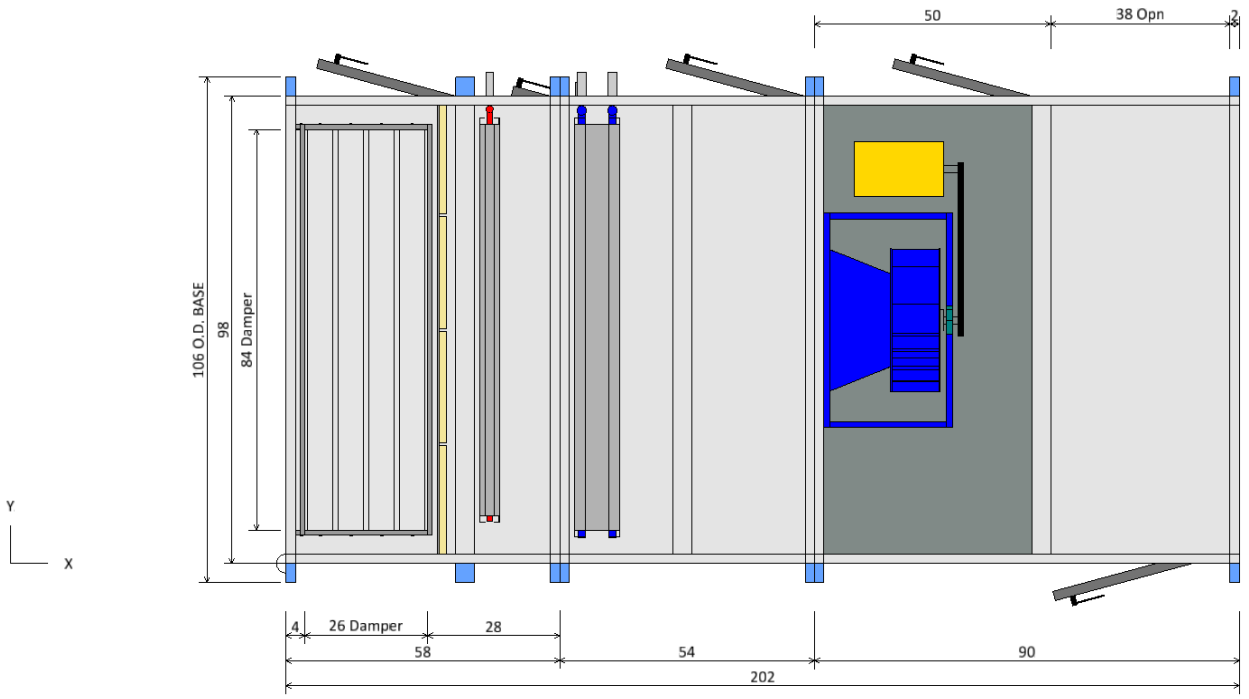
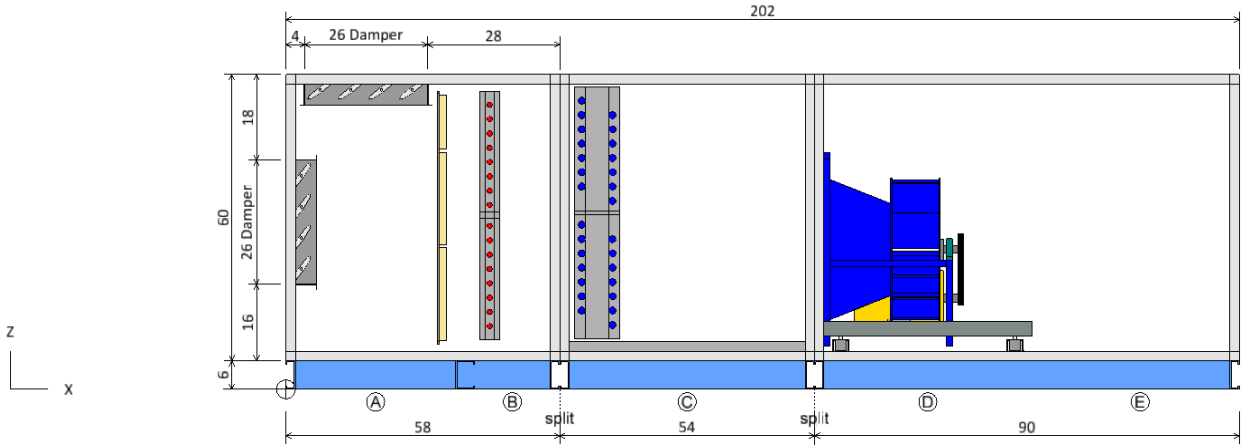
Job Number: SLUH3J
Job Name: Xavier University Qatara

Prepared Date: 9/30/2022

Drawing for AHU-4



PLAN VIEW



ELEVATION VIEW

Component Key

	Type	X	Y	Z	Wid	Hgt
Ⓐ	Mixing Box					
	Outside air damper	0.00	7.00	22.00	84.00	26.00
	Return air damper	4.00	7.00	66.00	84.00	26.00
Ⓔ	Plenum Section Opening	162.00	98.00	8.00	38.00	56.00

Note: Dimensions are measured from the origin point.

Opening/Damper Connections	Unit Tag: AHU-4			Sales Office: Mid-South Equipment Sales and ServicKH		
Product: Vision Air Handler	Project Name: Xavier University Qatara			Sales Engineer:		
Model: CAH031GDDM	Sept. 30, 2022	Ver/Rev:	Sheet: 1 of 1	Scale: NTS	Tolerance: +/-0.25"	Dwg Units: in

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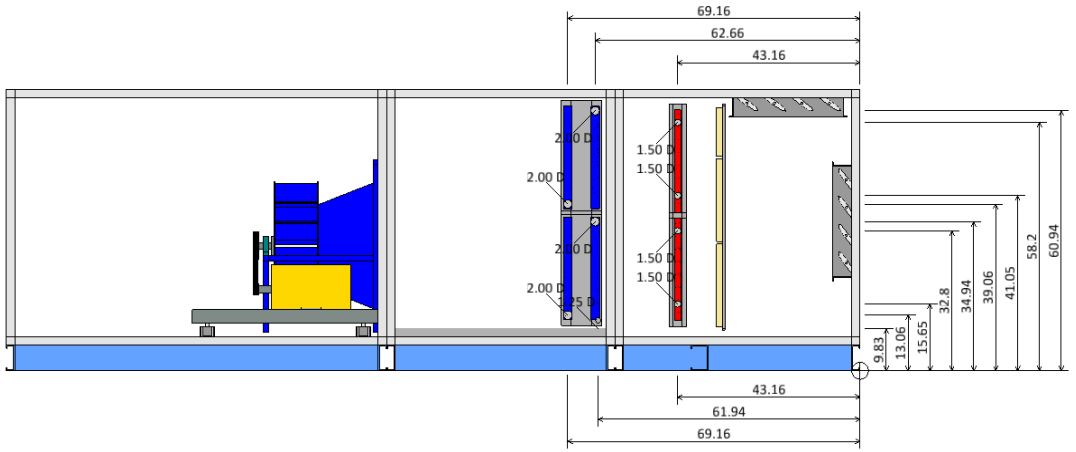
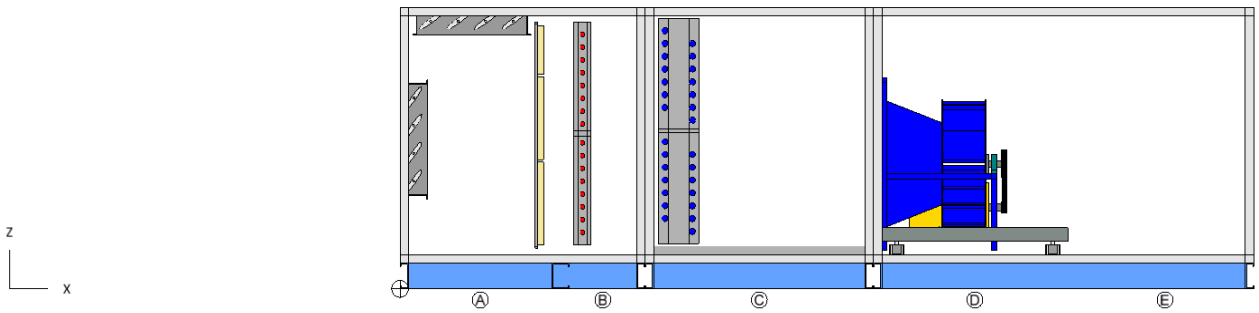
Drawing for AHU-4



LEFT ELEVATION VIEW



RIGHT ELEVATION VIEW

Coil and Drain Connections

	Type	X	Y	Z	Diam
Ⓑ	Hot Water Coil				
	Hot water inlet:	43.16	101.00	15.65	1.50
	Hot water outlet:	43.16	101.00	32.80	1.50
	Hot water inlet:	43.16	101.00	41.05	1.50
	Hot water outlet:	43.16	101.00	58.20	1.50
Ⓒ	Chilled Water coil				
	Condensate drain conn:	61.94	98.90	11.83	1.25
	Cold water inlet:	69.16	101.00	13.06	2.00
	Cold water outlet:	62.66	101.00	34.94	2.00
	Cold water inlet:	69.16	101.00	39.06	2.00
	Cold water outlet:	62.66	101.00	60.94	2.00

Note: Dimensions are measured from the origin point.

Coil and Drain Connections	Unit Tag: AHU-4			Sales Office: Mid-South Equipment Sales and ServicKH		
Product: Vision Air Handler	Project Name: Xavier University Qatara			Sales Engineer:		
Model: CAH031GDDM	Sept. 30, 2022	Ver/Rev:	Sheet: 1 of 1	Scale: NTS	Tolerance: +/-0.25"	Dwg Units: in

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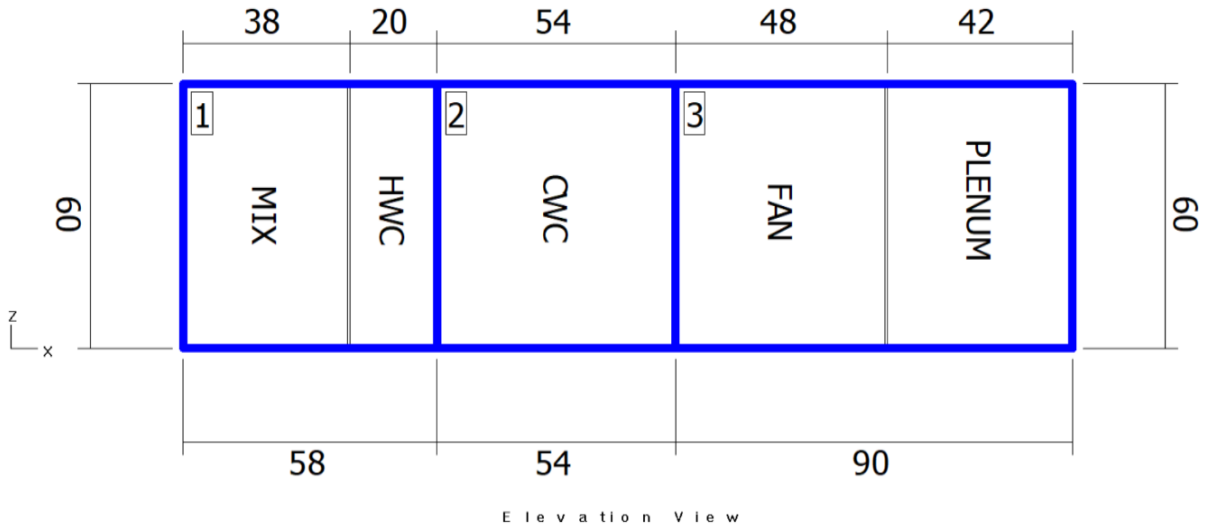
Drawing for AHU-4



Elevation View

Shipping Sections				
Section	Weight (lb)	X	Y	Z
Section 1	1166.12	58	98	60
Section 2	1645.14	54	98	60
Section 3	2126.10	90	98	60
Total Unit	4937.35	202	98	60

Note: Base rails, curb ready base, coil connectors, drain connectors, and control boxes not included in height X, Y, Z dimensions.
Shipping section may be 2" longer in air flow direction due to internal splice joint.

Shipping Sections	Unit Tag: AHU-4			Sales Office: Mid-South Equipment Sales and ServicKH		
Product: Vision Air Handler	Project Name: Xavier University Qatara			Sales Engineer:		
Model: CAH031GDDM	Sept. 30, 2022	Ver/Rev:	Sheet: 1 of 1	Scale: NTS	Tolerance: +/-0.25"	Dwg Units: in

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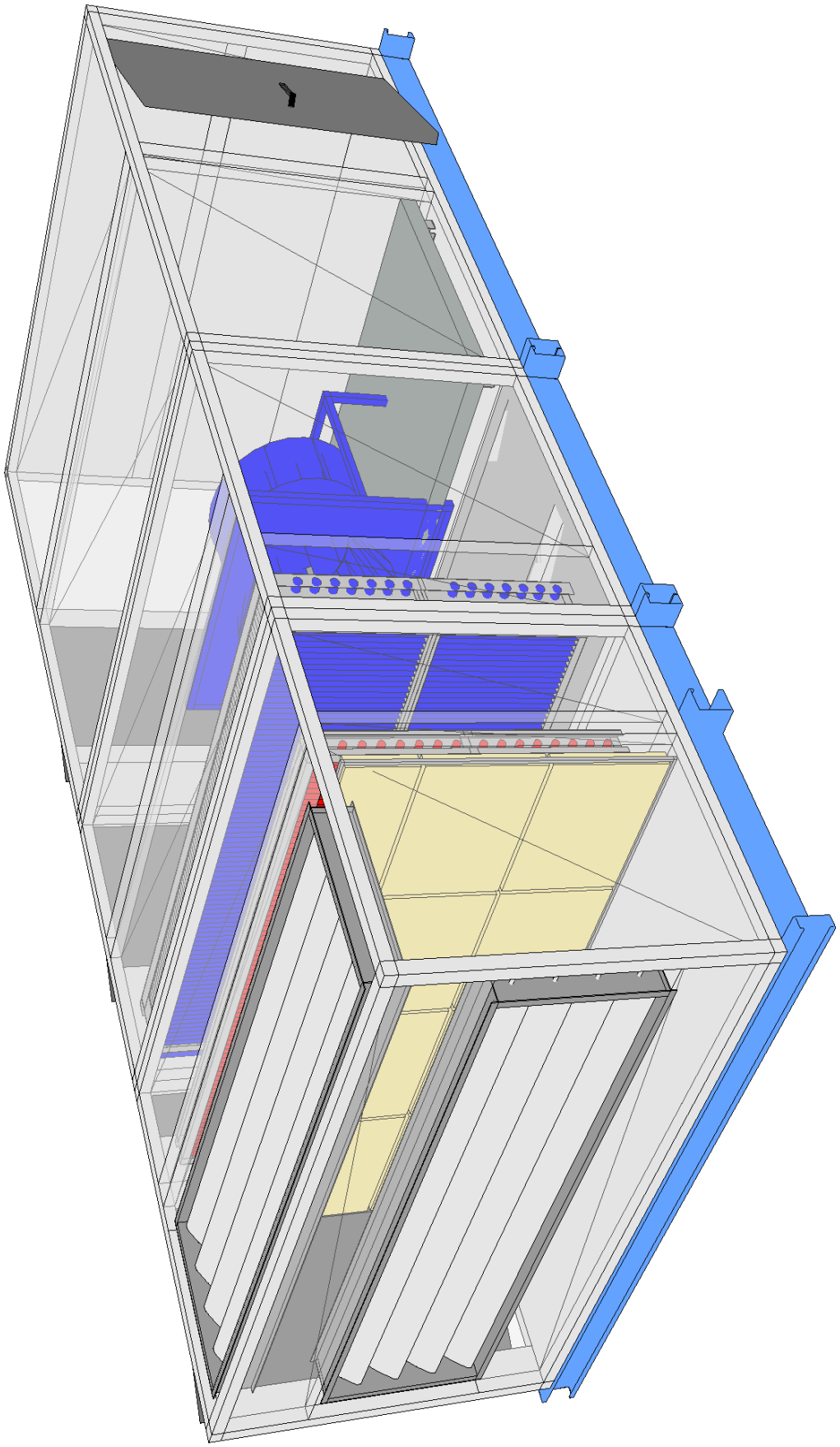
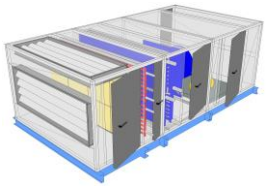
Drawing for AHU-4



Product Drawing	Unit Tag: AHU-4	Sales Office: Mid-South Equipment Sales and ServicKH	DAIKIN 13600 Industrial Park Blvd, Minneapolis, MN 55441 www.DaikinApplied.com Software Version: 13.00
Product: Vision Air Handler	Project Name: Xavier University Qatara	Sales Engineer:	
Model: CAH031GDDM	Sept. 30, 2022 | Ver/Rev: | Sheet: 1 of 1	Scale: NTS | Tolerance: +/-0.25" | Dwg Units: in	

Technical Data Sheet for AHU-5

Job Information	Technical Data Sheet
Job Name	Xavier University Qatara
Date	September 30 2022
Submitted By	KH
Software Version	13.00
Unit Tag	AHU-5



Unit Overview

Model Number	Supply					
	Air Volume cfm	Static Pressure		External Dimensions		
		External inWc	Total inWc	Height in	Width in	Length in
CAH031GDDM	13855	2.00	4.53	60*	98*	188

**Not including base rails, coil connectors, drain connectors and control boxes.*

Unit

Model Number:	CAH031GDDM		
Approval:	ETL Listed / ETL Listed to Canadian Safety Standards (ETL Label / ETLc Label)		
Outer Panel:	24 gauge G90 Galvanized Steel (unpainted)		
Liner:	24 gauge Galvanized Steel (unless noted per section)		
Insulation:	R-13 Injected Foam		
Unit Configuration:	Inline horizontal	**Drive (Handling) Location:**	Right
Base:	6" formed channel	**Wall Thickness:**	2 in
Altitude:	0 ft	**Parts Warranty:**	Standard One Year

Mixing Box

Component: 1 | Length: 40 in | Shipping Section: 1

Portion	Damper					Blade Action	Rated CFM	Air Pressure Drop	Quantity
	Size (length x width)		Location	Type	Actuation				
	Overall	Opening							
Outside Air	32 in x 94 in	28 in x 84 in	End	UltraSeal Low Leak	NA	Parallel	13855 cfm	0.06 insWg	1
Return Air	32 in x 94 in	28 in x 84 in	Top	UltraSeal Low Leak	NA	Parallel	13855 cfm		1

Filter Data

Type	Efficiency	Face Velocity	Face Area	Air Volume	Filter Loading
Pleated	MERV 8	424 ft/min	32.7 ft²	13855 cfm	Side

Air Pressure Drop				Number of Filters	Height	Width	Depth
Clean Air	Mean Air	Dirty Air	User Spec				
0.18 inWc	**0.59** inWc	1.00 inWc	N/A	8	20 in	24 in	2 in
				4	12 in	24 in	2 in

Door

Location	Width	Opening
Drive side	30 in	Outward

Technical Data Sheet for AHU-5

Hot Water Coil	Component: 2	Length: 20 in	Shipping Section: 1

Coil Model	Total Capacity	Number of Coils	Number of Rows	Fins per Inch	Tube Diameter	Tube Spacing (Face x Row)
5WB1001C	503399 Btu/hr	2	1	10	0.625 in	3.00 in x 1.299 in

Air Volume	Air Temperature		Coil Air Pressure Drop	Finned Height	Finned Length	Face Area	Face Velocity
	Entering Dry Bulb	Leaving Dry Bulb					
13855 cfm	25.0 °F	58.2 °F	0.17 inWc	24 in	82 in	27.33 ft²	507 ft/min

Water		Flow Rate	Pressure Drop	Velocity	Volume	Weight
Entering	Leaving					
180.0 °F	162.7 °F	58.20 gpm	10.00 ftHd	7.80 ft/s	4.0 gal	36.00 lb

Connection [Data Per Coil]				Min. Fin Surface Temp.	Min. Tube Wall Surface Temp.	Fouling Factor
Type	Size	Location	Material			
Threaded	1.50 in	Drive side	Carbon steel	162.7 °F	162.7 °F	0.000

Material			
Fin	Tube	Header	Case
Aluminum .0075 in	Copper .020 in	Copper	Galv. steel

AHRI 410 Certification

Certified in accordance with the AHRI Forced-Circulation Air-Cooling and Air-Heating Coils Certification Program which is based on AHRI Standard 410 within the Range of Standard Rating Conditions listed in Table 1 of the Standard. Certified units may be found in the AHRI Directory at www.ahridirectory.org

Door

Location	Width	Opening
Drive side	8 in	Outward

Chilled Water Coil	Component: 3	Length: 54 in	Shipping Section: 2

Coil Model	Total Capacity	Sensible Capacity	Number of Coils	Number of Rows	Fins per Inch	Tube Diameter	Tube Spacing (Face x Row)
5WM0808C	765453 Btu/hr	414713 Btu/hr	2	8	8	0.625 in	1.50 in x 1.299 in

Air Volume	Air Temperature				Coil Air Pressure Drop	Finned Height	Finned Length	Face Area	Face Velocity
	Entering		Leaving						
	Dry Bulb	Wet Bulb	Dry Bulb	Wet Bulb					
13855 cfm	80.5 °F	70.3 °F	53.1 °F	52.9 °F	1.60 inWc	24 in	85 in	28.33 ft²	489 ft/min

Water		Flow Rate	Pressure Drop	Velocity	Volume	Weight
Entering	Leaving					
45.0 °F	55.0 °F	152.60 gpm	7.50 ftHd	3.40 ft/s	30.0 gal	253.00 lb

Connection [Data Per Coil]				Min. Fin Surface Temp.	Min. Tube Wall Surface Temp.	Fouling Factor
Type	Size	Location	Material			
Threaded	2.50 in	Drive side	Carbon steel	45.0 °F	45.0 °F	0.000

Material				Drain Pan	Drain Side
Fin	Tube	Header	Case		
Aluminum .0075 in	Copper .020 in	Copper	Stainless steel	Stainless steel	Drive side

AHRI 410 Certification

Certified in accordance with the AHRI Forced-Circulation Air-Cooling and Air-Heating Coils Certification Program which is based on AHRI Standard 410 within the Range of Standard Rating Conditions listed in Table 1 of the Standard. Certified units may be found in the AHRI Directory at www.ahridirectory.org

Door

Location	Width	Opening
Drive side	30 in	Outward

Technical Data Sheet for AHU-5

Supply Fan	Component: 4	Length: 48 in	Shipping Section: 3

Fan Performance

Air Volume	Static Pressure			Fan Energy Index(FEI)	Total Input Power	Fan Shaft Power	Speed		Outlet Velocity
	External	Total	Cabinet				Operating	Maximum	
13855 cfm	2.00 inWc	4.53 inWc	0.00 inWc	1.33	11.6 kW	13.86 BHP	1377 rpm	1783 rpm	0 ft/min

Fan Data

Fan Type	Blade Type / Class	Quantity of Fans	Wheel Diameter	Material Type	Number of Blades	Discharge	Motor Location
Centrifugal - Plenum	Airfoil / 2	1	30.00 in	Steel	9	Axial	To Side of Fan

Motor Data

Power	Electrical Supply	Speed	Efficiency	Enclosure	Frame Size	Supplier	Number of Poles	Lock Rotor Current	Full Load Current
20.0 HP	460/60/3 V/Hz/Phase	1750 rpm	Premium	ODP	256 T frame	Generic	4	148.01 A	24.00 A

Fan Options

Isolator Type:	Spring

Drive Package Data*

Fan Sheave	Motor Sheave	Belt	Number of Belts	Actual Drive S.F.	Bearing Type
2B5V68	2B5V54	5VX860	2	1.38	Standard - L50 (200K)

**Daikin Applied reserves the right to provide a different but equivalent drive package*

Door

Location	Width	Opening
Drive side	30 in	Outward

Plenum Section	Component: 5	Length: 26 in	Shipping Section: 3

Opening Location	Opening Size	Air Pressure Drop
Top	22.00" x 94.00"	0.12 inWc

Door

Location	Width	Opening
Non-drive side	18 in	Outward

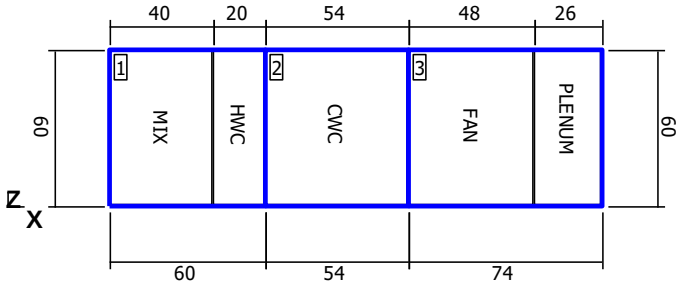
Unit Sound Power (dB)

Type	63 Hz	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz
Radiated:	80	78	82	66	62	53	46	51
Unit Discharge:	85	83	89	81	78	75	71	67
Unit Return:	80	78	85	66	63	61	55	51

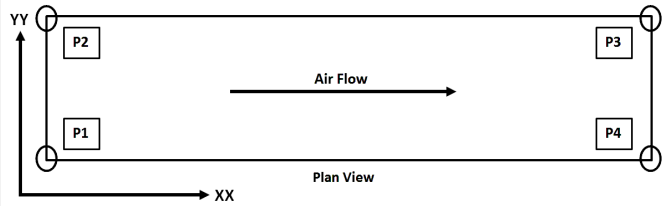
Technical Data Sheet for AHU-5

Shipping Section Details

Section	Length in	Weight lb	Corner Weights (lb)				Center of Gravity (in)		
			P1	P2	P3	P4	XX	YY	ZZ
1	60	1174	277	274	310	313	32	49	31
2	54	1844	631	603	290	319	18	47	31
3	74	2028	788	550	226	464	25	38	26
Entire Unit	**188**	**5046**	**1426**	**1156**	**1097**	**1367**	**92**	**44**	**29**



Elevation View



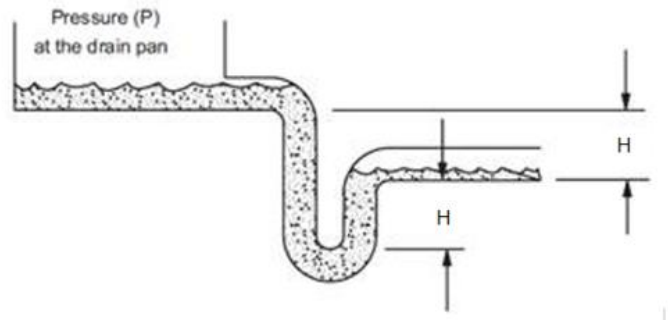
NOTE: Special components aren't included in the corner weights and center of gravity data.

Supply Static Pressure Drop

Component	Option	Static Pressure Drop
Mixing Box	Filter	0.59 insWg
Mixing Box	Mixing Box	0.05 insWg
Hot Water Coil	Hot Water Coil	0.17 insWg
Chilled Water coil	Chilled Water coil	1.60 insWg
Supply Fan	Cabinet	
Plenum Section	Plenum Section	0.12 insWg
External Static	External Static	2.00 insWg
Total Supply Fan Static		4.53 insWg

Minimum Recommended Drain Pan Trap Dimensions

Shipping Section	Component	H
2	Chilled Water coil	5.34



Dimensions provided as a courtesy and are recommended minimums only. Daikin is not responsible for supplying or designing drain pan traps and is not responsible for any damage caused by incorrect trap heights. The dimensions listed above should be reviewed and approved by a licensed plumbing professional.

Technical Data Sheet for AHU-5

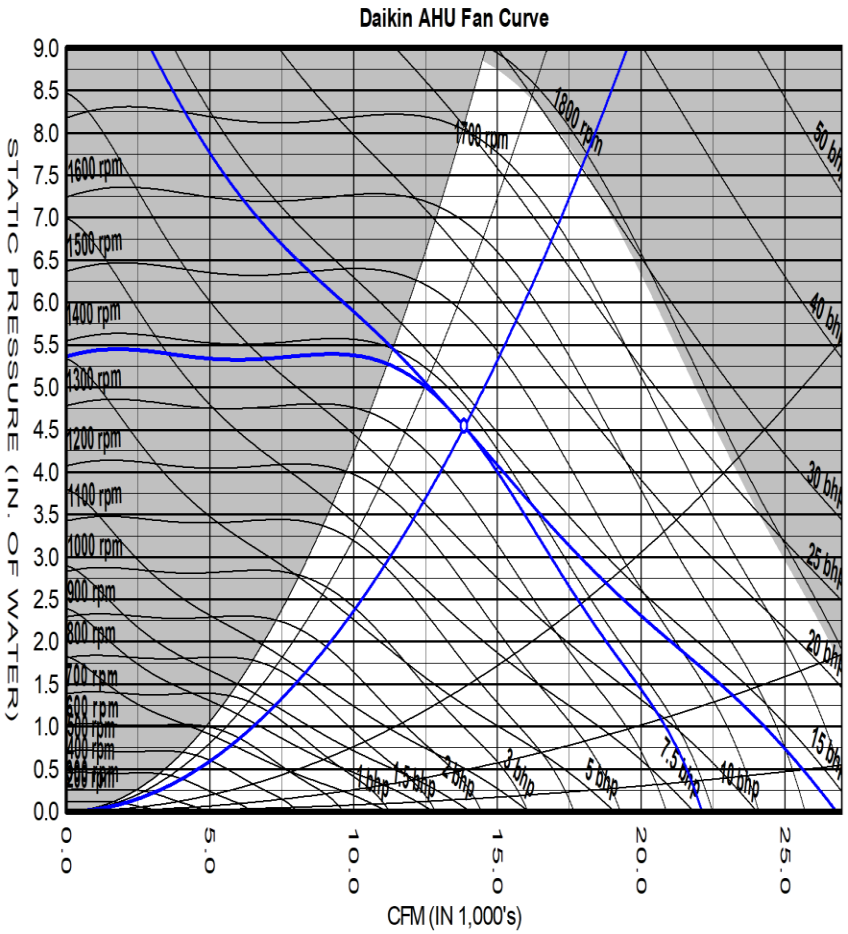
AHRI Certification

Certified in accordance with the AHRI Central Station Air-Handling Unit Certification Program, which is based on AHRI Standards 430/431. Certified units may be found in the AHRI Directory at www.ahridirectory.org.

Notes

Standard
1. As a standalone component, unit meets or exceeds requirements of ASHRAE 90.1 - 2007. The approving authority is responsible for compliance of multi - component building systems.

Fan Curve for AHU-5

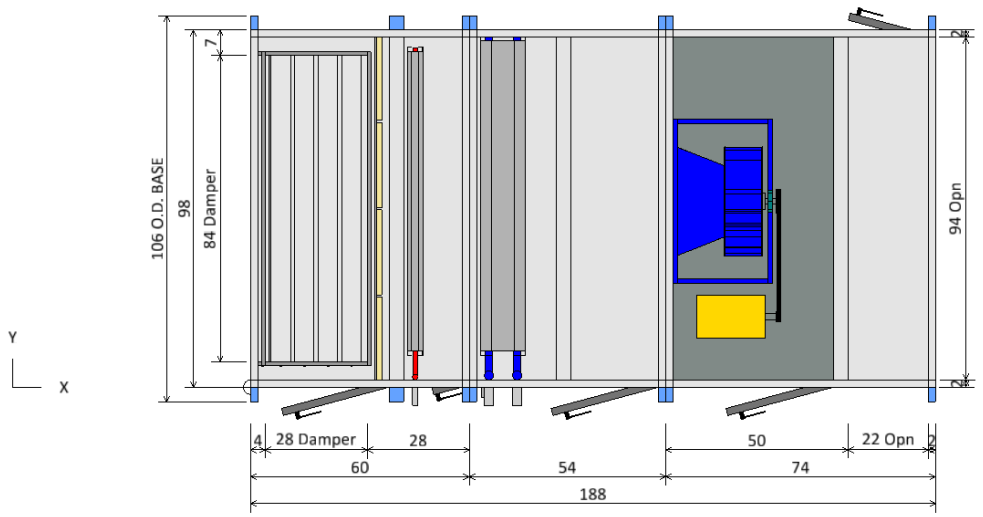


30.0" Airfoil Plenum Supply Fan at Standard Conditions					
Air volume	13855	cfm	Fan speed	1377	rpm
Total static	4.53	insWg	Max speed	1783	rpm
Fan Shaft Power	13.9	bhp	Efficiency	71.3	%
Fan Energy Index(FEI)	1.33				
Unit tagging	AHU-5		Date	September-30-2022	
Job name	Xavier University Qatara		Time	12:47	

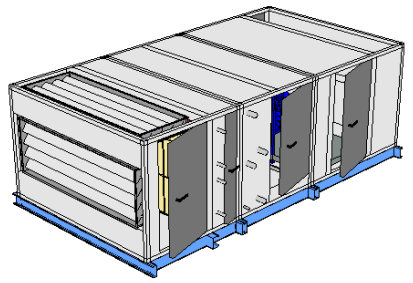
Supply fan performance is certified in accordance with the Central Station Air-Handling Unit Certification Program, which is based on AHRI Standard 430.

Drawing for AHU-5

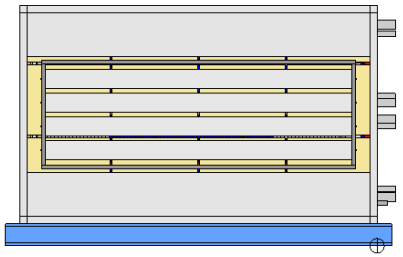
Drawing for AHU-5



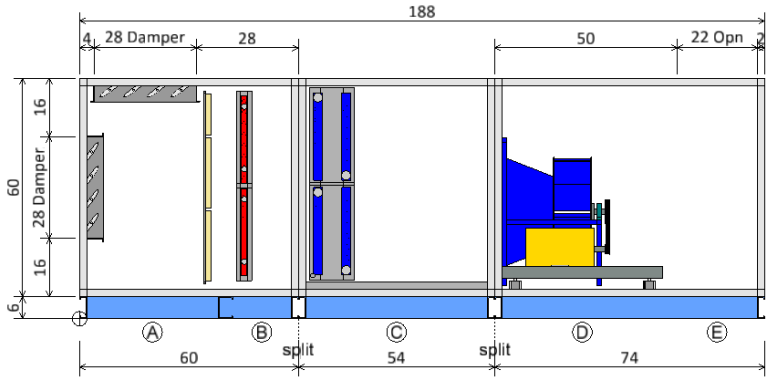
PLAN VIEW



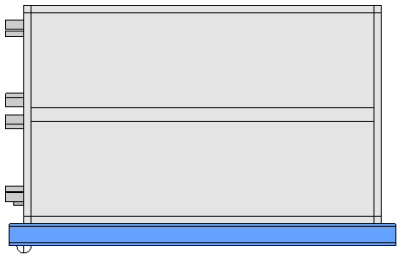
ISOMETRIC VIEW



FRONT END VIEW



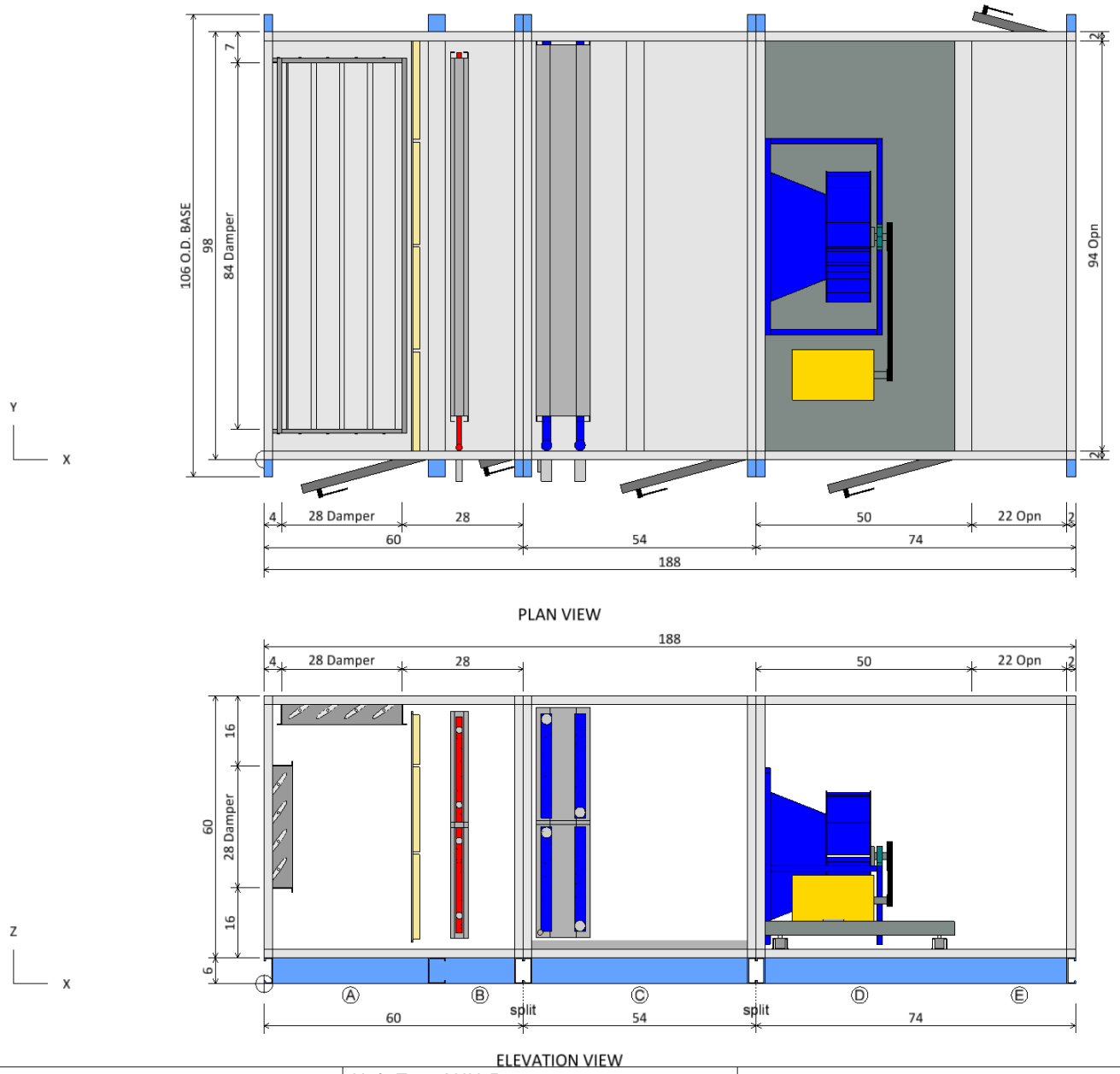
ELEVATION VIEW



REAR END VIEW

Plan/Elevation	Unit Tag: AHU-5			Sales Office: Mid-South Equipment Sales and ServicKH			DAIKIN
Product: Vision Air Handler	Project Name: Xavier University Qatara			Sales Engineer:			13600 Industrial Park Blvd, Minneapolis, MN 55441
Model: CAH031GDDM	Sept. 30, 2022	Ver/Rev:	Sheet: 1 of 1	Scale: NTS	Tolerance: +/-0.25"	Dwg Units: in	www.DaikinApplied.com Software Version: 13.00

Drawing for AHU-5



Component Key		
Ⓐ	Mixing Box	
	Filter Type:	PerfectPleat HC M8
	Right Door (WxH):	30 ins x 56 ins
Ⓑ	Hot Water Coil	
	Coil Model:	5WB1001C
	Total Capacity:	503399.0 Btu/hr
	Right Door (WxH):	8 ins x 56 ins
Ⓒ	Chilled Water coil	
	Coil Model:	5WM0808C
	Total Capacity:	765453.0 Btu/hr
	Right Door (WxH):	30 ins x 50 ins
Ⓓ	Supply Fan	
	Fan Type:	Centrifugal - Plenum
	Fan Size (Class):	30 (2)
	Air Flowrate:	13855.0 cfm
	T.S.P:	4.5 insWg
	Motor Power:	20.0 HP
	Right Door (WxH):	30 ins x 56 ins
Ⓔ	Plenum Section	
	Opening Location:	Top
	Opening Size:	22 ins x 94 ins
	Left Door (WxH):	18 ins x 56 ins

Plan/Elevation - No Ends	Unit Tag: AHU-5			Sales Office: Mid-South Equipment Sales and ServicKH		
Product: Vision Air Handler	Project Name: Xavier University Qatara			Sales Engineer:		
Model: CAH031GDDM	Sept. 30, 2022	Ver/Rev:	Sheet: 1 of 1	Scale: NTS	Tolerance: +/-0.25"	Dwg Units: in

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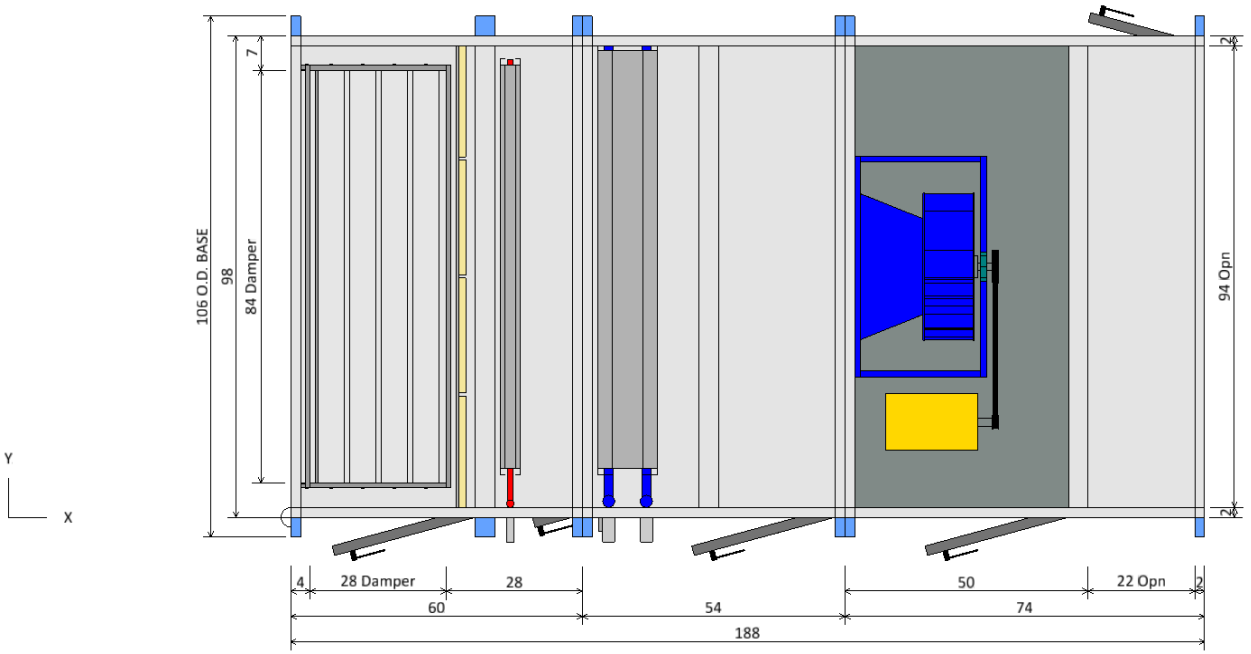
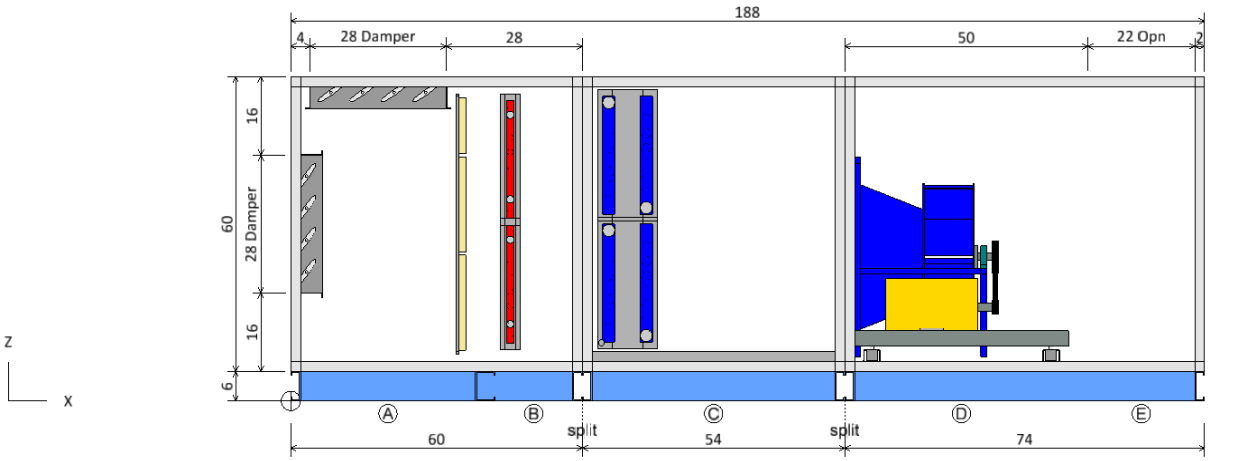
Drawing for AHU-5



PLAN VIEW



ELEVATION VIEW

Component Key

	Type	X	Y	Z	Wid	Hgt
Ⓐ	Mixing Box Outside air damper Return air damper	 0.00 4.00	 7.00 7.00	 22.00 66.00	 84.00 84.00	 28.00 28.00
Ⓔ	Plenum Section Opening	164.00	2.00	66.00	94.00	22.00

Note: Dimensions are measured from the origin point.

Opening/Damper Connections	Unit Tag: AHU-5			Sales Office: Mid-South Equipment Sales and ServicKH		
Product: Vision Air Handler	Project Name: Xavier University Qatara			Sales Engineer:		
Model: CAH031GDDM	Sept. 30, 2022	Ver/Rev:	Sheet: 1 of 1	Scale: NTS	Tolerance: +/-0.25"	Dwg Units: in

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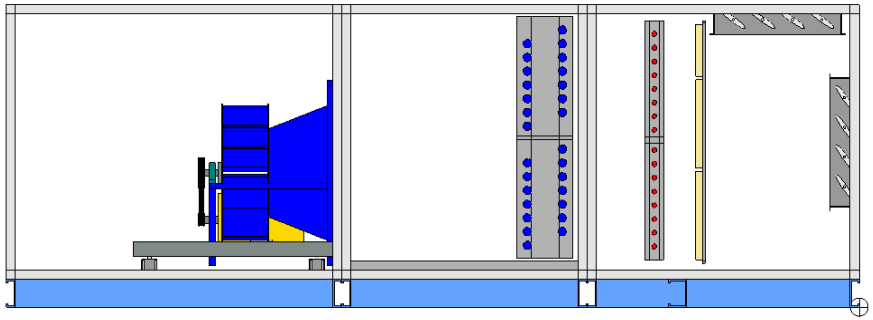
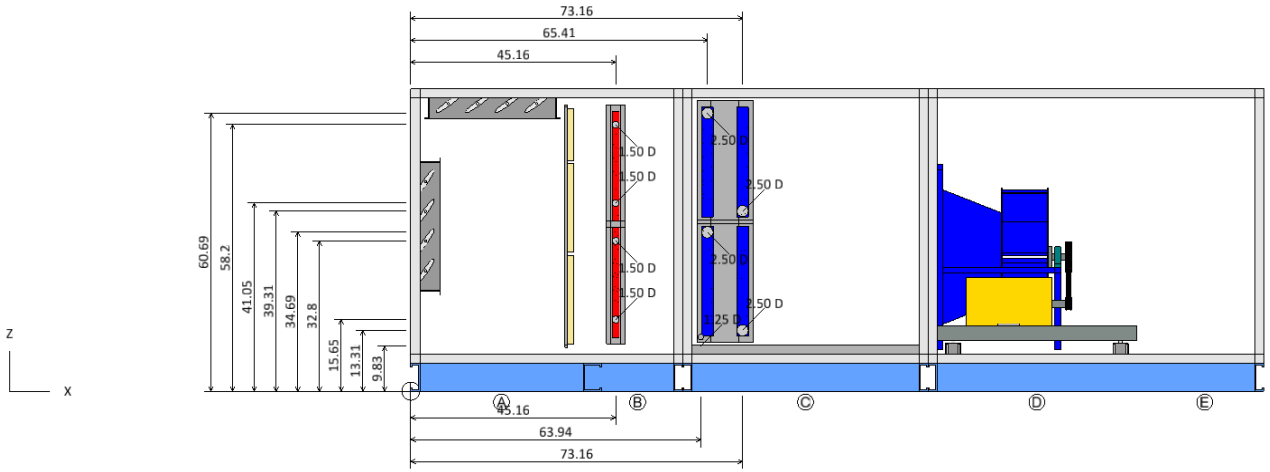
Drawing for AHU-5



LEFT ELEVATION VIEW



RIGHT ELEVATION VIEW

Coil and Drain Connections

	Type	X	Y	Z	Diam
Ⓑ	Hot Water Coil				
	Hot water inlet:	45.16	-7.00	15.65	1.50
	Hot water outlet:	45.16	-7.00	32.80	1.50
	Hot water inlet:	45.16	-7.00	41.05	1.50
	Hot water outlet:	45.16	-7.00	58.20	1.50
Ⓒ	Chilled Water coil				
	Condensate drain conn:	63.94	-4.90	11.83	1.25
	Cold water inlet:	73.16	-7.00	13.31	2.50
	Cold water outlet:	65.41	-7.00	34.69	2.50
	Cold water inlet:	73.16	-7.00	39.31	2.50
	Cold water outlet:	65.41	-7.00	60.69	2.50

Note: Dimensions are measured from the origin point.

Coil and Drain Connections	Unit Tag: AHU-5			Sales Office: Mid-South Equipment Sales and ServicKH		
Product: Vision Air Handler	Project Name: Xavier University Qatara			Sales Engineer:		
Model: CAH031GDDM	Sept. 30, 2022	Ver/Rev:	Sheet: 1 of 1	Scale: NTS	Tolerance: +/-0.25"	Dwg Units: in

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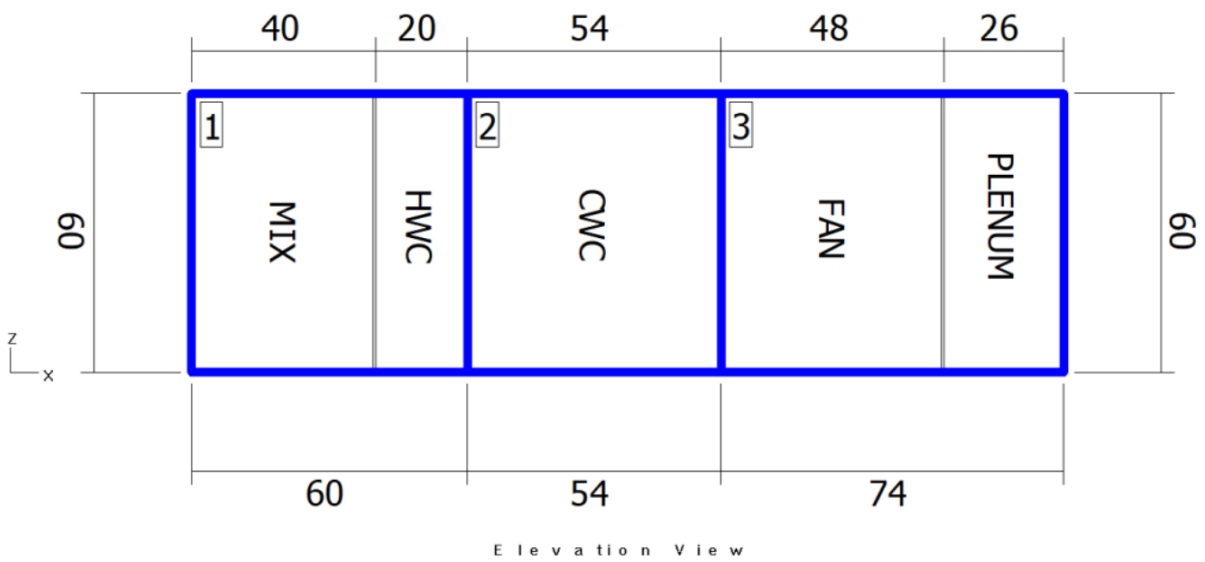
Drawing for AHU-5



Elevation View

Shipping Sections				
Section	Weight (lb)	X	Y	Z
Section 1	1173.99	60	98	60
Section 2	1843.88	54	98	60
Section 3	2028.01	74	98	60
Total Unit	5045.88	188	98	60

Note: Base rails, curb ready base, coil connectors, drain connectors, and control boxes not included in height X, Y, Z dimensions.
Shipping section may be 2" longer in air flow direction due to internal splice joint.

Shipping Sections	Unit Tag: AHU-5			Sales Office: Mid-South Equipment Sales and ServicKH		
Product: Vision Air Handler	Project Name: Xavier University Qatara			Sales Engineer:		
Model: CAH031GDDM	Sept. 30, 2022	Ver/Rev:	Sheet: 1 of 1	Scale: NTS	Tolerance: +/-0.25"	Dwg Units: in

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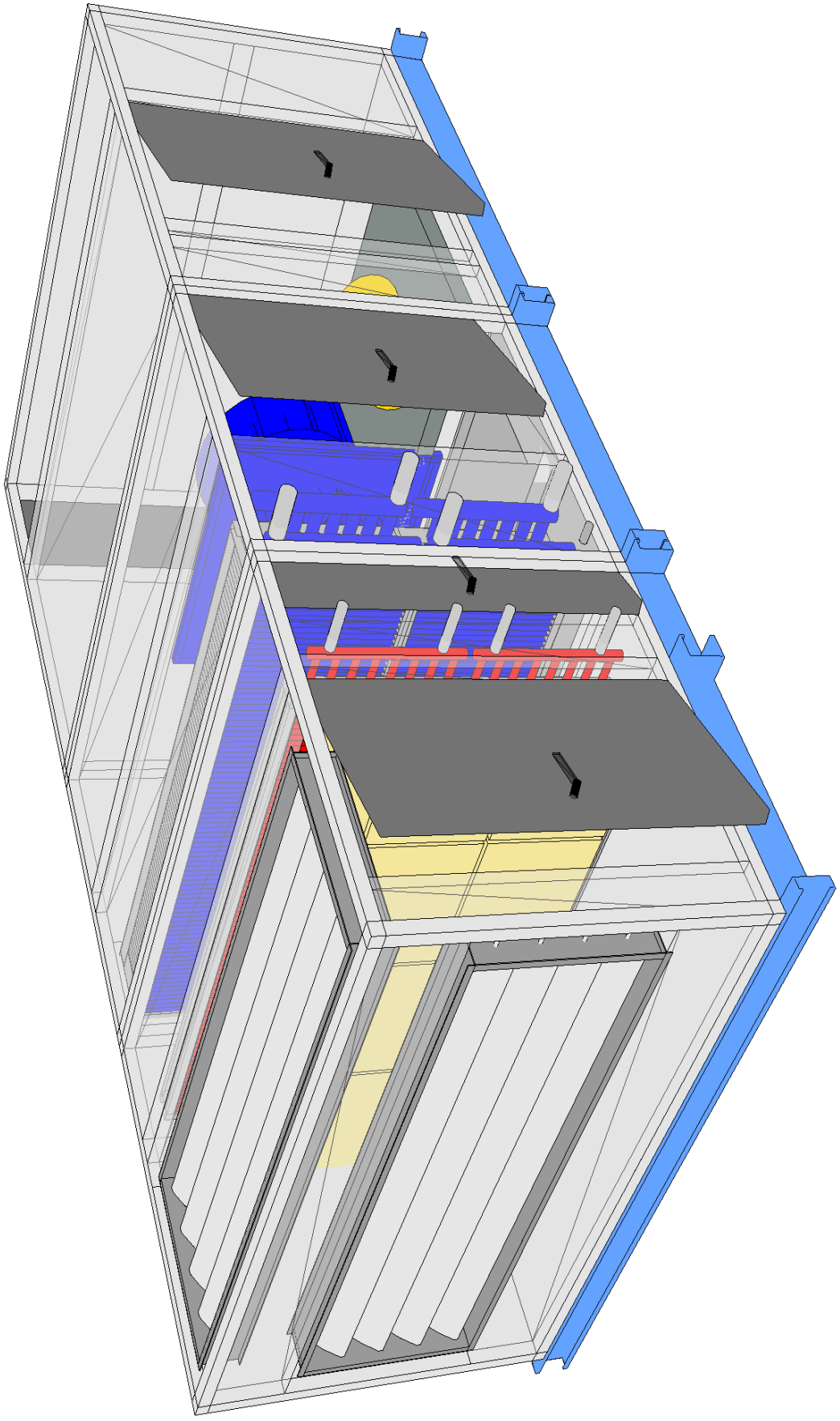
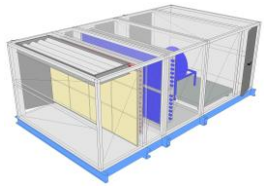
Drawing for AHU-5



Product Drawing	Unit Tag: AHU-5	Sales Office: Mid-South Equipment Sales and ServicKH	DAIKIN
Product: Vision Air Handler	Project Name: Xavier University Qatara	Sales Engineer:	13600 Industrial Park Blvd, Minneapolis, MN 55441
Model: CAH031GDDM	Sept. 30, 2022 | Ver/Rev: | Sheet: 1 of 1	Scale: NTS | Tolerance: +/-0.25" | Dwg Units: in	www.DaikinApplied.com Software Version: 13.00

Technical Data Sheet for AHU-6A

Job Information	Technical Data Sheet
Job Name	Xavier University Qatara
Date	September 30 2022
Submitted By	KH
Software Version	13.00
Unit Tag	AHU-6A



Unit Overview

Model Number	Supply					
	Air Volume cfm	Static Pressure		External Dimensions		
		External inWc	Total inWc	Height in	Width in	Length in
CAH031GDDM	14600	2.25	5.10	60*	98*	178

**Not including base rails, coil connectors, drain connectors and control boxes.*

Unit

Model Number:	CAH031GDDM		
Approval:	ETL Listed / ETL Listed to Canadian Safety Standards (ETL Label / ETLc Label)		
Outer Panel:	24 gauge G90 Galvanized Steel (unpainted)		
Liner:	24 gauge Galvanized Steel (unless noted per section)		
Insulation:	R-13 Injected Foam		
Unit Configuration:	Inline horizontal	**Drive (Handling) Location:**	Left
Base:	6" formed channel	**Wall Thickness:**	2 in
Altitude:	0 ft	**Parts Warranty:**	Standard One Year

Mixing Box

Component: 1 | Length: 38 in | Shipping Section: 1

Portion	Damper					Blade Action	Rated CFM	Air Pressure Drop	Quantity
	Size (length x width)		Location	Type	Actuation				
	Overall	Opening							
Outside Air	30 in x 94 in	26 in x 84 in	Top	UltraSeal Low Leak	NA	Parallel	14600 cfm	0.07 insWg	1
Return Air	No opening	No opening		None		None	14600 cfm		0

Filter Data

Type	Efficiency	Face Velocity	Face Area	Air Volume	Filter Loading
Pleated	MERV 8	446 ft/min	32.7 ft²	14600 cfm	Side

Air Pressure Drop				Number of Filters	Height	Width	Depth
Clean Air	Mean Air	Dirty Air	User Spec				
0.20 inWc	**0.60** inWc	1.00 inWc	N/A	8	20 in	24 in	2 in
				4	12 in	24 in	2 in

Door

Location	Width	Opening
Drive side	30 in	Outward

Technical Data Sheet for AHU-6A

Hot Water Coil	Component: 2	Length: 20 in	Shipping Section: 1

Coil Model	Total Capacity	Number of Coils	Number of Rows	Fins per Inch	Tube Diameter	Tube Spacing (Face x Row)
5WB1101C	545642 Btu/hr	2	1	11	0.625 in	3.00 in x 1.299 in

Air Volume	Air Temperature		Coil Air Pressure Drop	Finned Height	Finned Length	Face Area	Face Velocity
	Entering Dry Bulb	Leaving Dry Bulb					
14600 cfm	25.0 °F	59.2 °F	0.20 inWc	24 in	82 in	27.33 ft²	534 ft/min

Water		Flow Rate	Pressure Drop	Velocity	Volume	Weight
Entering	Leaving					
180.0 °F	161.3 °F	58.30 gpm	10.10 ftHd	7.80 ft/s	4.0 gal	36.00 lb

Connection [Data Per Coil]				Min. Fin Surface Temp.	Min. Tube Wall Surface Temp.	Fouling Factor
Type	Size	Location	Material			
Threaded	1.50 in	Drive side	Carbon steel	161.3 °F	161.3 °F	0.000

Material			
Fin	Tube	Header	Case
Aluminum .0075 in	Copper .020 in	Copper	Galv. steel

AHRI 410 Certification

Certified in accordance with the AHRI Forced-Circulation Air-Cooling and Air-Heating Coils Certification Program which is based on AHRI Standard 410 within the Range of Standard Rating Conditions listed in Table 1 of the Standard. Certified units may be found in the AHRI Directory at www.ahridirectory.org

Door

Location	Width	Opening
Drive side	8 in	Outward

Chilled Water Coil	Component: 3	Length: 44 in	Shipping Section: 2

Coil Model	Total Capacity	Sensible Capacity	Number of Coils	Number of Rows	Fins per Inch	Tube Diameter	Tube Spacing (Face x Row)
5WD0908C	1207542 Btu/hr	490247 Btu/hr	2	8	9	0.625 in	1.50 in x 1.299 in

Air Volume	Air Temperature				Coil Air Pressure Drop	Finned Height	Finned Length	Face Area	Face Velocity
	Entering Dry Bulb	Entering Wet Bulb	Leaving Dry Bulb	Leaving Wet Bulb					
14600 cfm	84.9 °F	77.5 °F	54.2 °F	54.0 °F	1.87 inWc	24 in	85 in	28.33 ft²	515 ft/min

Water		Flow Rate	Pressure Drop	Velocity	Volume	Weight
Entering	Leaving					
45.0 °F	54.9 °F	243.80 gpm	10.80 ftHd	4.10 ft/s	30.0 gal	254.00 lb

Connection [Data Per Coil]				Min. Fin Surface Temp.	Min. Tube Wall Surface Temp.	Fouling Factor
Type	Size	Location	Material			
Threaded	2.50 in	Drive side	Carbon steel	45.0 °F	45.0 °F	0.000

Material				Drain Pan	Drain Side
Fin	Tube	Header	Case		
Aluminum .0075 in	Copper .020 in	Copper	Stainless steel	Stainless steel	Drive side

AHRI 410 Certification

Certified in accordance with the AHRI Forced-Circulation Air-Cooling and Air-Heating Coils Certification Program which is based on AHRI Standard 410 within the Range of Standard Rating Conditions listed in Table 1 of the Standard. Certified units may be found in the AHRI Directory at www.ahridirectory.org

Door

Location	Width	Opening
Drive side	22 in	Outward

Technical Data Sheet for AHU-6A

Supply Fan	Component: 4	Length: 48 in	Shipping Section: 3

Fan Performance

Air Volume	Static Pressure			Fan Energy Index(FEI)	Total Input Power	Fan Shaft Power	Speed		Outlet Velocity
	External	Total	Cabinet				Operating	Maximum	
14600 cfm	2.25 inWc	5.10 inWc	0.00 inWc	1.31	13.7 kW	16.41 BHP	1456 rpm	1783 rpm	0 ft/min

Fan Data

Fan Type	Blade Type / Class	Quantity of Fans	Wheel Diameter	Material Type	Number of Blades	Discharge	Motor Location
Centrifugal - Plenum	Airfoil / 2	1	30.00 in	Steel	9	Axial	To Side of Fan

Motor Data

Power	Electrical Supply	Speed	Efficiency	Enclosure	Frame Size	Supplier	Number of Poles	Lock Rotor Current	Full Load Current
20.0 HP	460/60/3 V/Hz/Phase	1750 rpm	Premium	ODP	256 T frame	Generic	4	148.01 A	24.00 A

Fan Options

Isolator Type:	Spring

Drive Package Data*

Fan Sheave	Motor Sheave	Belt	Number of Belts	Actual Drive S.F.	Bearing Type
2B5V64	2B5V54	5VX850	2	1.37	Standard - L50 (200K)

**Daikin Applied reserves the right to provide a different but equivalent drive package*

Door

Location	Width	Opening
Drive side	30 in	Outward

Plenum Section	Component: 5	Length: 28 in	Shipping Section: 3

Opening Location	Opening Size	Air Pressure Drop
Top	24.00" x 94.00"	0.11 inWc

Door

Location	Width	Opening
Non-drive side	20 in	Outward

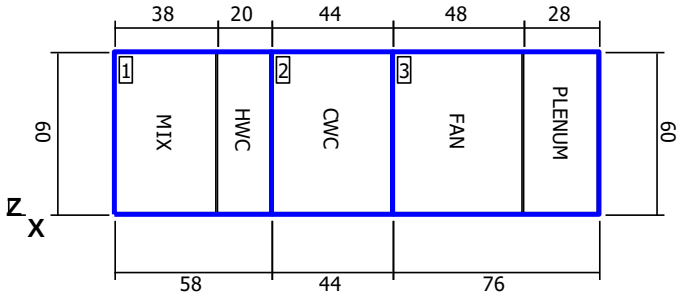
Unit Sound Power (dB)

Type	63 Hz	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz
Radiated:	81	79	83	68	64	53	46	51
Unit Discharge:	86	84	90	83	80	75	73	68
Unit Return:	81	79	86	68	64	61	56	51

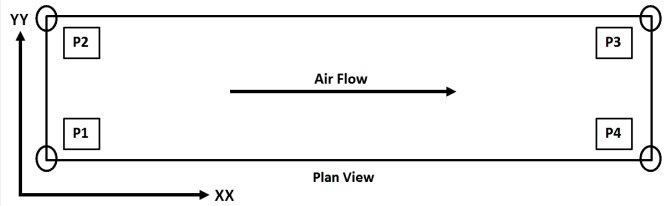
Technical Data Sheet for AHU-6A

Shipping Section Details

Section	Length in	Weight lb	Corner Weights (lb)				Center of Gravity (in)		
			P1	P2	P3	P4	XX	YY	ZZ
1	58	1130	257	261	308	304	31	49	30
2	44	1728	559	589	305	275	15	51	31
3	76	2035	793	555	224	462	26	38	27
Entire Unit	**178**	**4893**	**1366**	**1162**	**1081**	**1285**	**86**	**45**	**29**



Elevation View



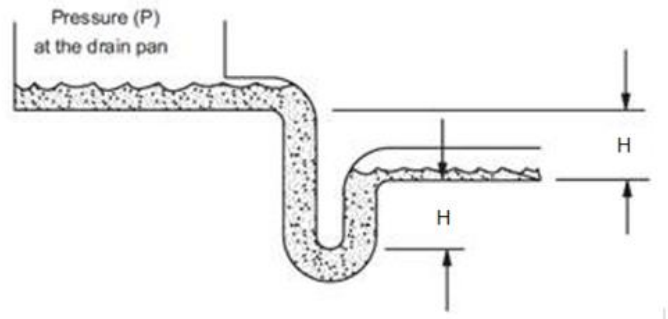
NOTE: Special components aren't included in the corner weights and center of gravity data.

Supply Static Pressure Drop

Component	Option	Static Pressure Drop
Mixing Box	Filter	0.60 insWg
Mixing Box	Mixing Box	0.07 insWg
Hot Water Coil	Hot Water Coil	0.20 insWg
Chilled Water coil	Chilled Water coil	1.87 insWg
Supply Fan	Cabinet	
Plenum Section	Plenum Section	0.11 insWg
External Static	External Static	2.25 insWg
Total Supply Fan Static		5.10 insWg

Minimum Recommended Drain Pan Trap Dimensions

Shipping Section	Component	H
2	Chilled Water coil	5.98



Dimensions provided as a courtesy and are recommended minimums only. Daikin is not responsible for supplying or designing drain pan traps and is not responsible for any damage caused by incorrect trap heights. The dimensions listed above should be reviewed and approved by a licensed plumbing professional.

Technical Data Sheet for AHU-6A

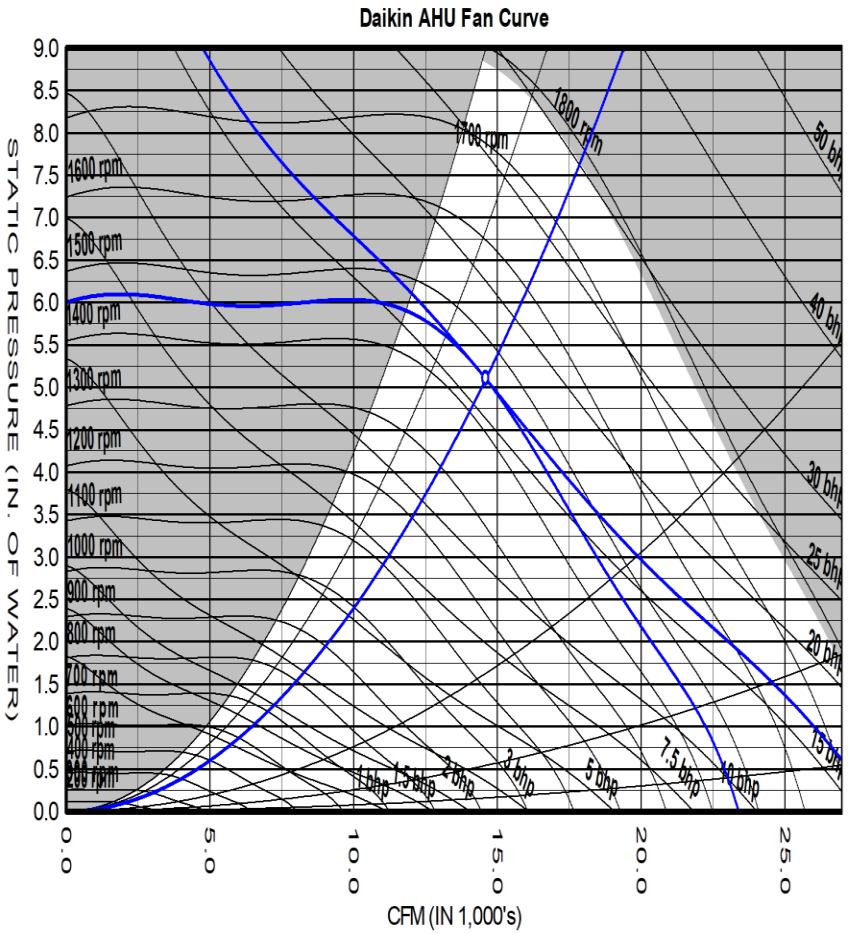
AHRI Certification

Certified in accordance with the AHRI Central Station Air-Handling Unit Certification Program, which is based on AHRI Standards 430/431. Certified units may be found in the AHRI Directory at www.ahridirectory.org.

Notes

Standard
1. As a standalone component, unit meets or exceeds requirements of ASHRAE 90.1 - 2007. The approving authority is responsible for compliance of multi - component building systems.

Fan Curve for AHU-6A



30.0" Airfoil Plenum Supply Fan at Standard Conditions					
Air volume	14600	cfm	Fan speed	1456	rpm
Total static	5.10	insWg	Max speed	1783	rpm
Fan Shaft Power	16.4	bhp	Efficiency	71.4	%
Fan Energy Index(FEI)	1.31				
Unit tagging	AHU-6A		Date	September-30-2022	
Job name	Xavier University Qatara		Time	12:47	

Supply fan performance is certified in accordance with the Central Station Air-Handling Unit Certification Program, which is based on AHRI Standard 430.

Drawing for AHU-6A

Job Number: SLUH3J
Job Name: Xavier Universitv Qatara

Page 48 of 68

Prepared Date: 9/30/2022

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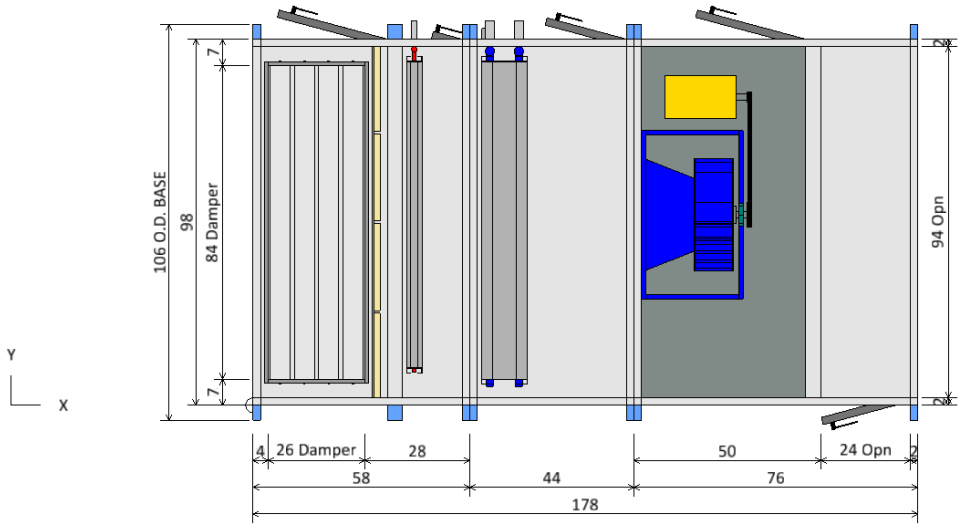
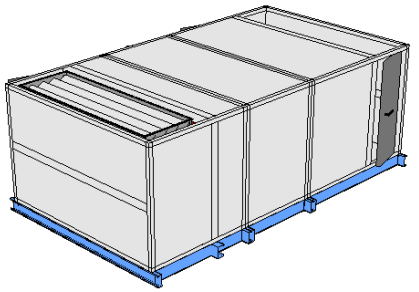
Drawing for AHU-6A



PLAN VIEW



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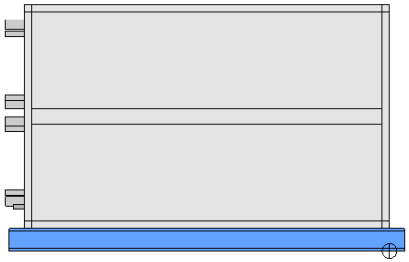
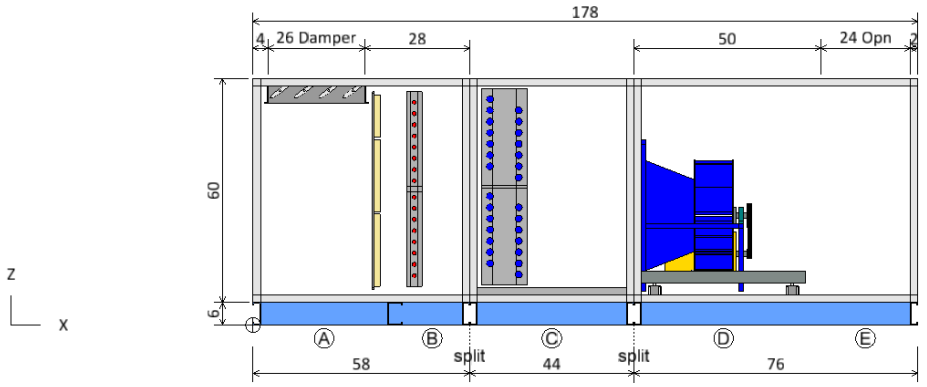
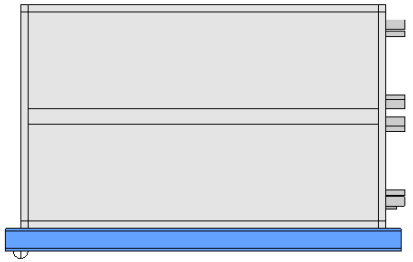


FRONT END VIEW



ELEVATION VIEW



REAR END VIEW

Plan/Elevation	Unit Tag: AHU-6A			Sales Office: Mid-South Equipment Sales and ServicKH		
Product: Vision Air Handler	Project Name: Xavier University Qatara			Sales Engineer:		
Model: CAH031GDDM	Sept. 30, 2022	Ver/Rev:	Sheet: 1 of 1	Scale: NTS	Tolerance: +/-0.25"	Dwg Units: in

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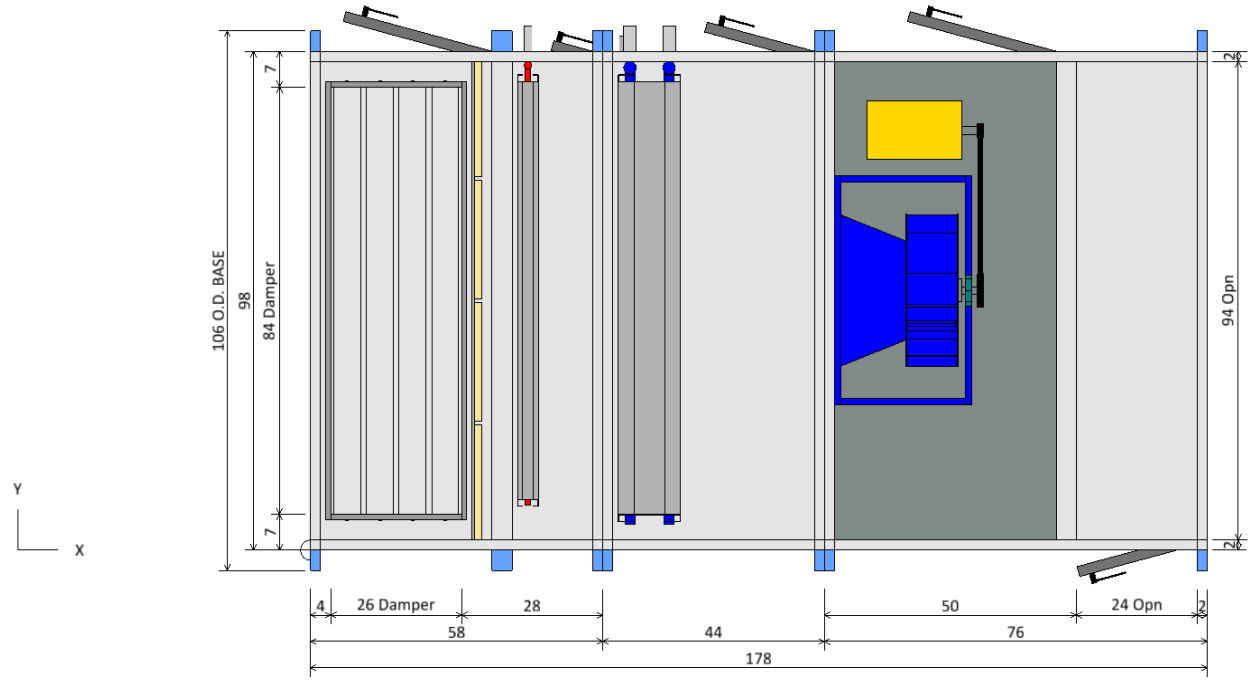
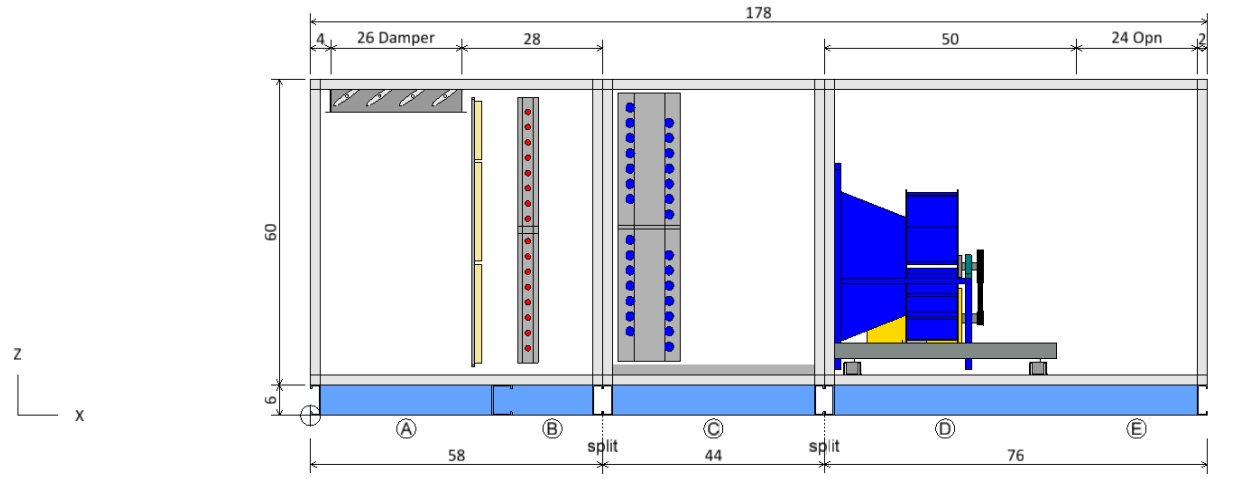
Drawing for AHU-6A



PLAN VIEW



ELEVATION VIEW

Component Key		
Ⓐ	Mixing Box	
	Filter Type:	PerfectPleat HC M8
	Left Door (WxH):	30 ins x 56 ins
Ⓑ	Hot Water Coil	
	Coil Model:	5WB1101C
	Total Capacity:	545642.0 Btu/hr
	Left Door (WxH):	8 ins x 56 ins
Ⓒ	Chilled Water coil	
	Coil Model:	5WD0908C
	Total Capacity:	1207542.0 Btu/hr
	Left Door (WxH):	22 ins x 50 ins
Ⓓ	Supply Fan	
	Fan Type:	Centrifugal - Plenum
	Fan Size (Class):	30 (2)
	Air Flowrate:	14600.0 cfm
	T.S.P:	5.1 insWg
	Motor Power:	20.0 HP
	Left Door (WxH):	30 ins x 56 ins
Ⓔ	Plenum Section	
	Opening Location:	Top
	Opening Size:	24 ins x 94 ins
	Right Door (WxH):	20 ins x 56 ins

Plan/Elevation - No Ends	Unit Tag: AHU-6A			Sales Office: Mid-South Equipment Sales and ServicKH		
Product: Vision Air Handler	Project Name: Xavier University Qatara			Sales Engineer:		
Model: CAH031GDDM	Sept. 30, 2022	Ver/Rev:	Sheet: 1 of 1	Scale: NTS	Tolerance: +/-0.25"	Dwg Units: in

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Job Number: SLUH3J
Job Name: Xavier University Qatara

Prepared Date: 9/30/2022

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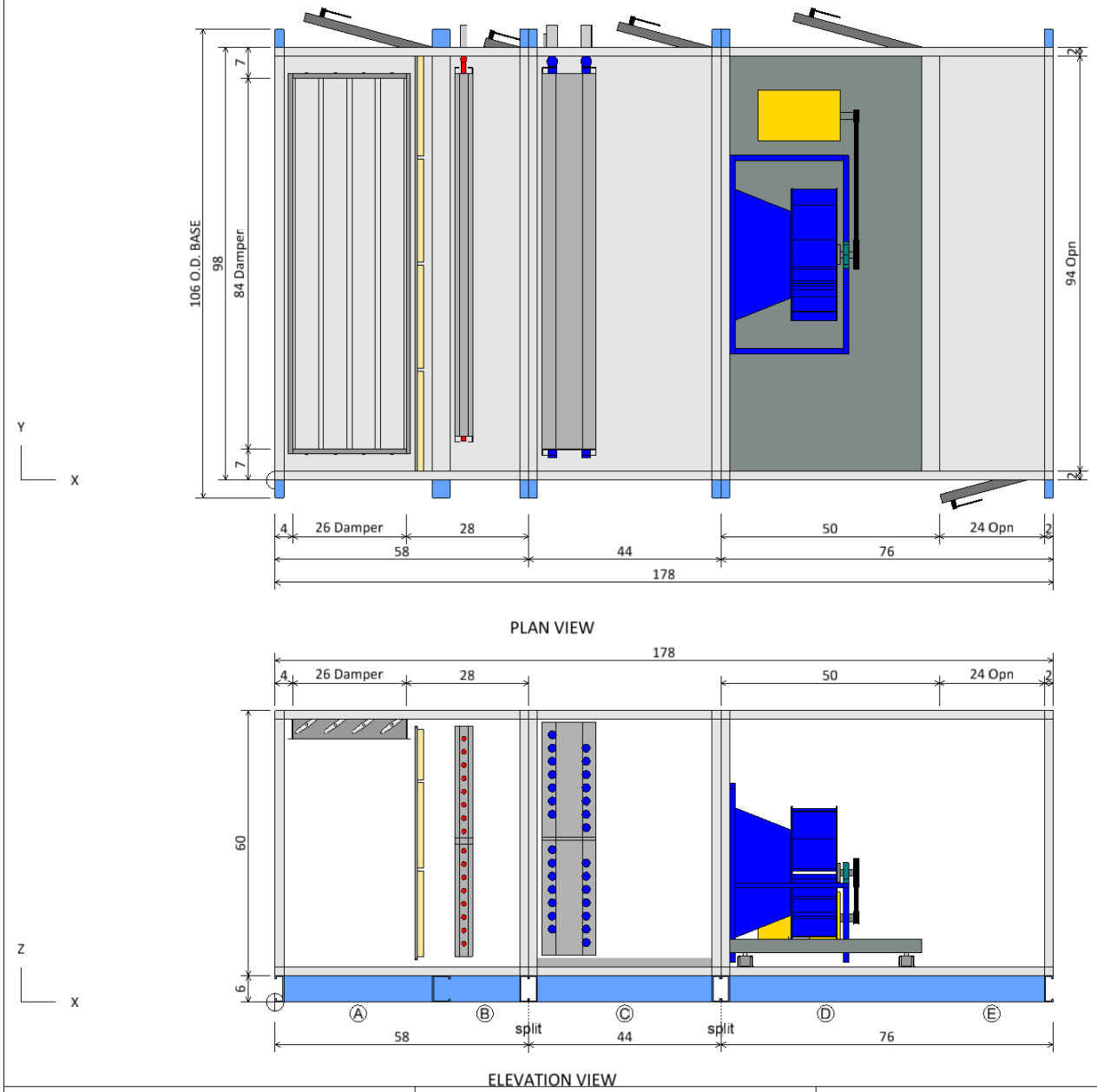
Drawing for AHU-6A



Component Key

	Type	X	Y	Z	Wid	Hgt
Ⓐ	Mixing Box Outside air damper	4.00	7.00	66.00	84.00	26.00
Ⓔ	Plenum Section Opening	152.00	2.00	66.00	94.00	24.00

Note: Dimensions are measured from the origin point.

Opening/Damper Connections	Unit Tag: AHU-6A			Sales Office: Mid-South Equipment Sales and ServicKH		
Product: Vision Air Handler	Project Name: Xavier University Qatara			Sales Engineer:		
Model: CAH031GDDM	Sept. 30, 2022	Ver/Rev:	Sheet: 1 of 1	Scale: NTS	Tolerance: +/-0.25"	Dwg Units: in

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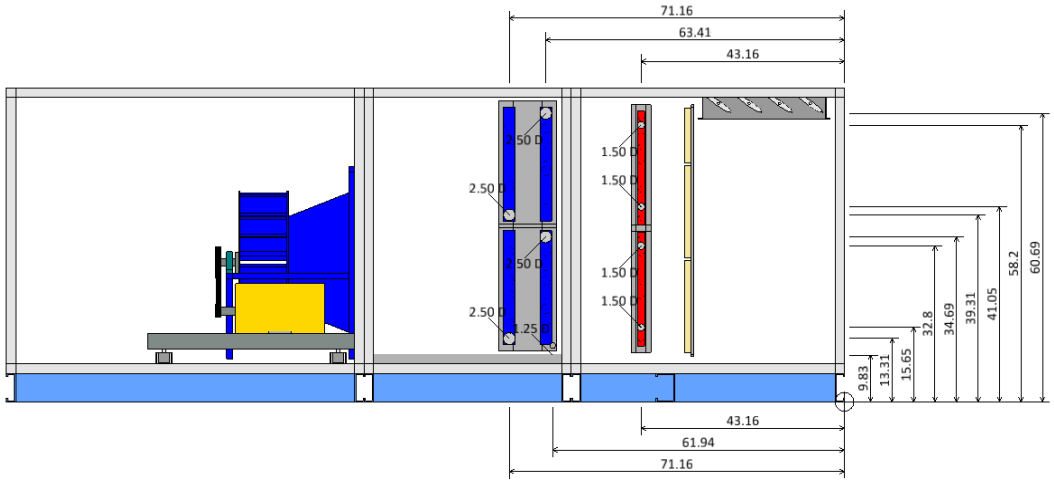
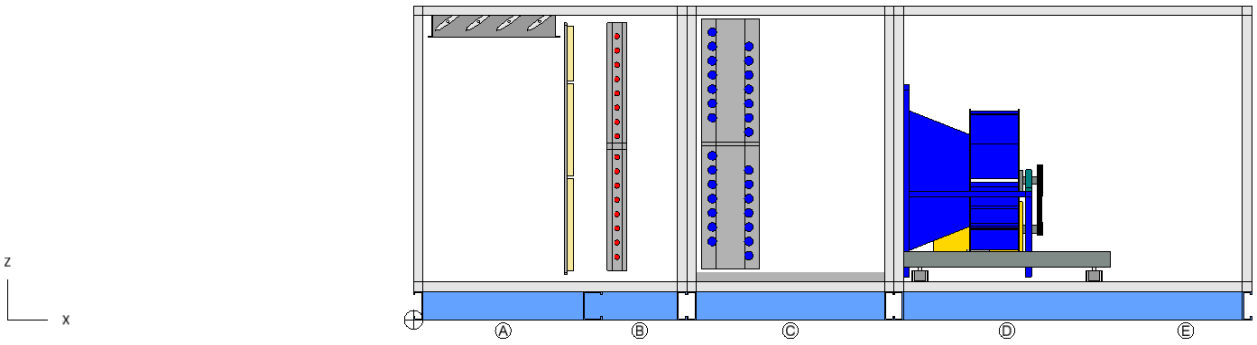
Drawing for AHU-6A



LEFT ELEVATION VIEW



RIGHT ELEVATION VIEW

Coil and Drain Connections

	Type	X	Y	Z	Diam
Ⓑ	Hot Water Coil				
	Hot water inlet:	43.16	101.00	15.65	1.50
	Hot water outlet:	43.16	101.00	32.80	1.50
	Hot water inlet:	43.16	101.00	41.05	1.50
	Hot water outlet:	43.16	101.00	58.20	1.50
Ⓒ	Chilled Water coil				
	Condensate drain conn:	61.94	98.90	11.83	1.25
	Cold water inlet:	71.16	101.00	13.31	2.50
	Cold water outlet:	63.41	101.00	34.69	2.50
	Cold water inlet:	71.16	101.00	39.31	2.50
	Cold water outlet:	63.41	101.00	60.69	2.50

Note: Dimensions are measured from the origin point.

Coil and Drain Connections	Unit Tag: AHU-6A			Sales Office: Mid-South Equipment Sales and ServicKH		
Product: Vision Air Handler	Project Name: Xavier University Qatara			Sales Engineer:		
Model: CAH031GDDM	Sept. 30, 2022	Ver/Rev:	Sheet: 1 of 1	Scale: NTS	Tolerance: +/-0.25"	Dwg Units: in

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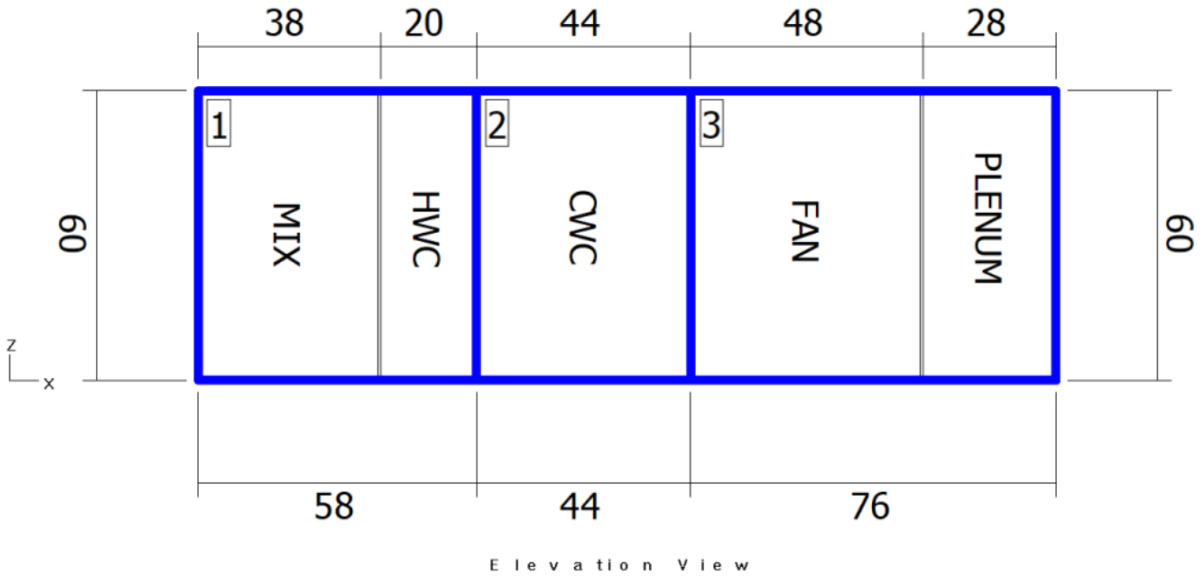
Drawing for AHU-6A



Elevation View

Shipping Sections

Section	Weight (lb)	X	Y	Z
Section 1	1129.74	58	98	60
Section 2	1727.88	44	98	60
Section 3	2035.38	76	98	60
Total Unit	4893.00	178	98	60

Note: Base rails, curb ready base, coil connectors, drain connectors, and control boxes not included in height X, Y, Z dimensions. Shipping section may be 2" longer in air flow direction due to internal splice joint.

Shipping Sections	Unit Tag: AHU-6A			Sales Office: Mid-South Equipment Sales and ServicKH		
Product: Vision Air Handler	Project Name: Xavier University Qatara			Sales Engineer:		
Model: CAH031GDDM	Sept. 30, 2022	Ver/Rev:	Sheet: 1 of 1	Scale: NTS	Tolerance: +/-0.25"	Dwg Units: in

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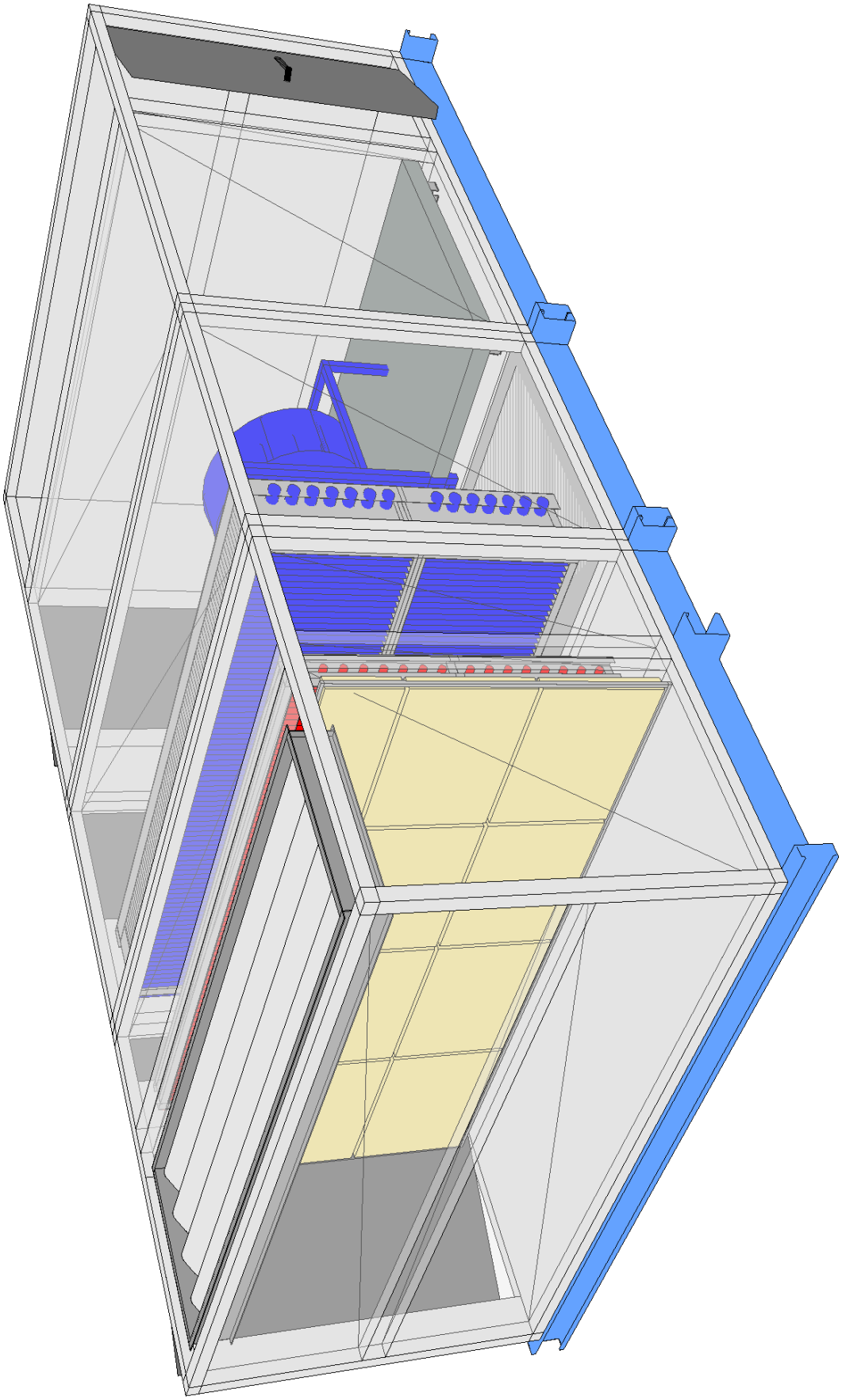
Drawing for AHU-6A



Product Drawing	Unit Tag: AHU-6A	Sales Office: Mid-South Equipment Sales and ServicKH
Product: Vision Air Handler	Project Name: Xavier University Qatara	Sales Engineer:
Model: CAH031GDDM	Sept. 30, 2022 | Ver/Rev: | Sheet: 1 of 1	Scale: NTS | Tolerance: +/-0.25" | Dwg Units: in

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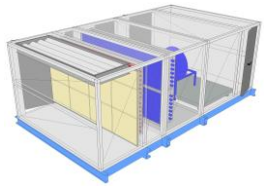
Technical Data Sheet for AHU-6B

Job Information	Technical Data Sheet
Job Name	Xavier University Qatara
Date	September 30 2022
Submitted By	KH
Software Version	13.00
Unit Tag	AHU-6B



Unit Overview

Model Number	Supply					
	Air Volume cfm	Static Pressure		External Dimensions		
		External inWc	Total inWc	Height in	Width in	Length in
CAH031GDDM	14600	2.25	5.10	60*	98*	178

**Not including base rails, coil connectors, drain connectors and control boxes.*

Unit

Model Number:	CAH031GDDM		
Approval:	ETL Listed / ETL Listed to Canadian Safety Standards (ETL Label / ETLc Label)		
Outer Panel:	24 gauge G90 Galvanized Steel (unpainted)		
Liner:	24 gauge Galvanized Steel (unless noted per section)		
Insulation:	R-13 Injected Foam		
Unit Configuration:	Inline horizontal	**Drive (Handling) Location:**	Left
Base:	6" formed channel	**Wall Thickness:**	2 in
Altitude:	0 ft	**Parts Warranty:**	Standard One Year

Mixing Box

Component: 1 | Length: 38 in | Shipping Section: 1

Portion	Damper					Blade Action	Rated CFM	Air Pressure Drop	Quantity
	Size (length x width)		Location	Type	Actuation				
	Overall	Opening							
Outside Air	30 in x 94 in	26 in x 84 in	Top	UltraSeal Low Leak	NA	Parallel	14600 cfm	0.07 insWg	1
Return Air	No opening	No opening		None		None	14600 cfm		0

Filter Data

Type	Efficiency	Face Velocity	Face Area	Air Volume	Filter Loading
Pleated	MERV 8	446 ft/min	32.7 ft²	14600 cfm	Side

Air Pressure Drop				Number of Filters	Height	Width	Depth
Clean Air	Mean Air	Dirty Air	User Spec				
0.20 inWc	**0.60** inWc	1.00 inWc	N/A	8	20 in	24 in	2 in
				4	12 in	24 in	2 in

Door

Location	Width	Opening
Drive side	30 in	Outward

Technical Data Sheet for AHU-6B

Hot Water Coil	Component: 2	Length: 20 in	Shipping Section: 1

Coil Model	Total Capacity	Number of Coils	Number of Rows	Fins per Inch	Tube Diameter	Tube Spacing (Face x Row)
5WB1101C	545642 Btu/hr	2	1	11	0.625 in	3.00 in x 1.299 in

Air Volume	Air Temperature		Coil Air Pressure Drop	Finned Height	Finned Length	Face Area	Face Velocity
	Entering Dry Bulb	Leaving Dry Bulb					
14600 cfm	25.0 °F	59.2 °F	0.20 inWc	24 in	82 in	27.33 ft²	534 ft/min

Water		Flow Rate	Pressure Drop	Velocity	Volume	Weight
Entering	Leaving					
180.0 °F	161.3 °F	58.30 gpm	10.10 ftHd	7.80 ft/s	4.0 gal	36.00 lb

Connection [Data Per Coil]				Min. Fin Surface Temp.	Min. Tube Wall Surface Temp.	Fouling Factor
Type	Size	Location	Material			
Threaded	1.50 in	Drive side	Carbon steel	161.3 °F	161.3 °F	0.000

Material			
Fin	Tube	Header	Case
Aluminum .0075 in	Copper .020 in	Copper	Galv. steel

AHRI 410 Certification

Certified in accordance with the AHRI Forced-Circulation Air-Cooling and Air-Heating Coils Certification Program which is based on AHRI Standard 410 within the Range of Standard Rating Conditions listed in Table 1 of the Standard. Certified units may be found in the AHRI Directory at www.ahridirectory.org

Door

Location	Width	Opening
Drive side	8 in	Outward

Chilled Water Coil	Component: 3	Length: 44 in	Shipping Section: 2

Coil Model	Total Capacity	Sensible Capacity	Number of Coils	Number of Rows	Fins per Inch	Tube Diameter	Tube Spacing (Face x Row)
5WD0908C	1207542 Btu/hr	490247 Btu/hr	2	8	9	0.625 in	1.50 in x 1.299 in

Air Volume	Air Temperature				Coil Air Pressure Drop	Finned Height	Finned Length	Face Area	Face Velocity
	Entering Dry Bulb	Entering Wet Bulb	Leaving Dry Bulb	Leaving Wet Bulb					
14600 cfm	84.9 °F	77.5 °F	54.2 °F	54.0 °F	1.87 inWc	24 in	85 in	28.33 ft²	515 ft/min

Water		Flow Rate	Pressure Drop	Velocity	Volume	Weight
Entering	Leaving					
45.0 °F	54.9 °F	243.80 gpm	10.80 ftHd	4.10 ft/s	30.0 gal	254.00 lb

Connection [Data Per Coil]				Min. Fin Surface Temp.	Min. Tube Wall Surface Temp.	Fouling Factor
Type	Size	Location	Material			
Threaded	2.50 in	Drive side	Carbon steel	45.0 °F	45.0 °F	0.000

Material				Drain Pan	Drain Side
Fin	Tube	Header	Case		
Aluminum .0075 in	Copper .020 in	Copper	Stainless steel	Stainless steel	Drive side

AHRI 410 Certification

Certified in accordance with the AHRI Forced-Circulation Air-Cooling and Air-Heating Coils Certification Program which is based on AHRI Standard 410 within the Range of Standard Rating Conditions listed in Table 1 of the Standard. Certified units may be found in the AHRI Directory at www.ahridirectory.org

Door

Location	Width	Opening
Drive side	22 in	Outward

Technical Data Sheet for AHU-6B

Supply Fan	Component: 4	Length: 48 in	Shipping Section: 3

Fan Performance

Air Volume	Static Pressure			Fan Energy Index(FEI)	Total Input Power	Fan Shaft Power	Speed		Outlet Velocity
	External	Total	Cabinet				Operating	Maximum	
14600 cfm	2.25 inWc	5.10 inWc	0.00 inWc	1.31	13.7 kW	16.41 BHP	1456 rpm	1783 rpm	0 ft/min

Fan Data

Fan Type	Blade Type / Class	Quantity of Fans	Wheel Diameter	Material Type	Number of Blades	Discharge	Motor Location
Centrifugal - Plenum	Airfoil / 2	1	30.00 in	Steel	9	Axial	To Side of Fan

Motor Data

Power	Electrical Supply	Speed	Efficiency	Enclosure	Frame Size	Supplier	Number of Poles	Lock Rotor Current	Full Load Current
20.0 HP	460/60/3 V/Hz/Phase	1750 rpm	Premium	ODP	256 T frame	Generic	4	148.01 A	24.00 A

Fan Options

Isolator Type:	Spring

Drive Package Data*

Fan Sheave	Motor Sheave	Belt	Number of Belts	Actual Drive S.F.	Bearing Type
2B5V64	2B5V54	5VX850	2	1.37	Standard - L50 (200K)

**Daikin Applied reserves the right to provide a different but equivalent drive package*

Door

Location	Width	Opening
Drive side	30 in	Outward

Plenum Section	Component: 5	Length: 28 in	Shipping Section: 3

Opening Location	Opening Size	Air Pressure Drop
Top	24.00" x 94.00"	0.11 inWc

Door

Location	Width	Opening
Non-drive side	20 in	Outward

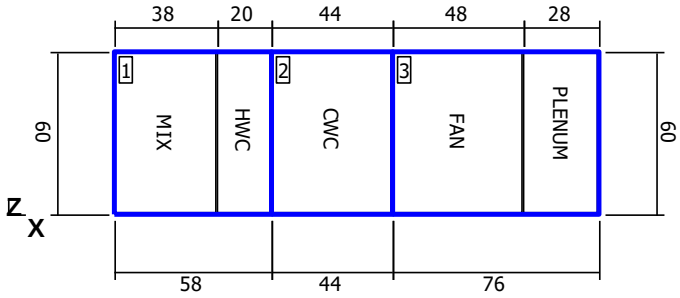
Unit Sound Power (dB)

Type	63 Hz	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz
Radiated:	81	79	83	68	64	53	46	51
Unit Discharge:	86	84	90	83	80	75	73	68
Unit Return:	81	79	86	68	64	61	56	51

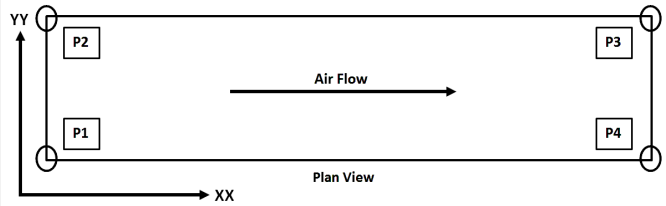
Technical Data Sheet for AHU-6B

Shipping Section Details

Section	Length in	Weight lb	Corner Weights (lb)				Center of Gravity (in)		
			P1	P2	P3	P4	XX	YY	ZZ
1	58	1130	257	261	308	304	31	49	30
2	44	1728	559	589	305	275	15	51	31
3	76	2035	793	555	224	462	26	38	27
Entire Unit	**178**	**4893**	**1366**	**1162**	**1081**	**1285**	**86**	**45**	**29**



Elevation View



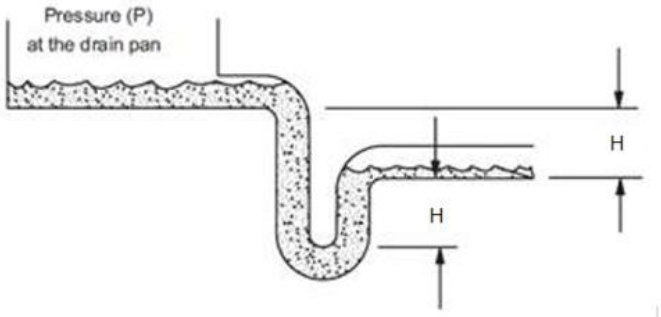
NOTE: Special components aren't included in the corner weights and center of gravity data.

Supply Static Pressure Drop

Component	Option	Static Pressure Drop
Mixing Box	Filter	0.60 insWg
Mixing Box	Mixing Box	0.07 insWg
Hot Water Coil	Hot Water Coil	0.20 insWg
Chilled Water coil	Chilled Water coil	1.87 insWg
Supply Fan	Cabinet	
Plenum Section	Plenum Section	0.11 insWg
External Static	External Static	2.25 insWg
Total Supply Fan Static		5.10 insWg

Minimum Recommended Drain Pan Trap Dimensions

Shipping Section	Component	H
2	Chilled Water coil	5.98



Dimensions provided as a courtesy and are recommended minimums only. Daikin is not responsible for supplying or designing drain pan traps and is not responsible for any damage caused by incorrect trap heights. The dimensions listed above should be reviewed and approved by a licensed plumbing professional.

Technical Data Sheet for AHU-6B

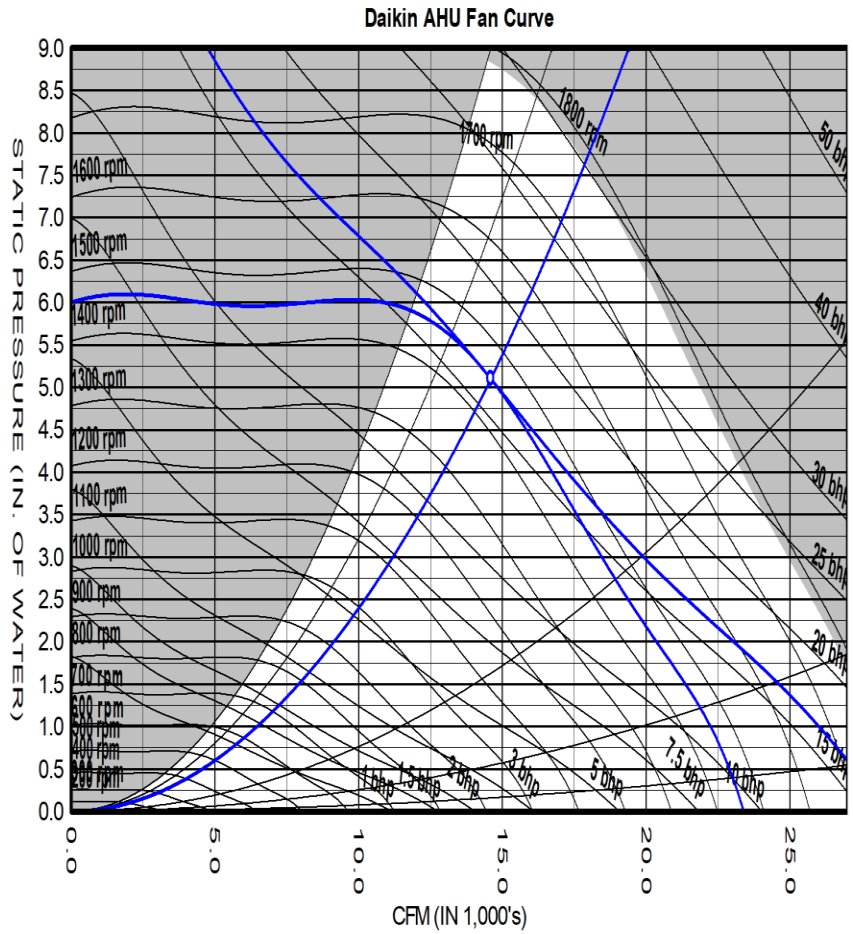
AHRI Certification

Certified in accordance with the AHRI Central Station Air-Handling Unit Certification Program, which is based on AHRI Standards 430/431. Certified units may be found in the AHRI Directory at www.ahridirectory.org.

Notes

Standard
1. As a standalone component, unit meets or exceeds requirements of ASHRAE 90.1 - 2007. The approving authority is responsible for compliance of multi - component building systems.

Fan Curve for AHU-6B

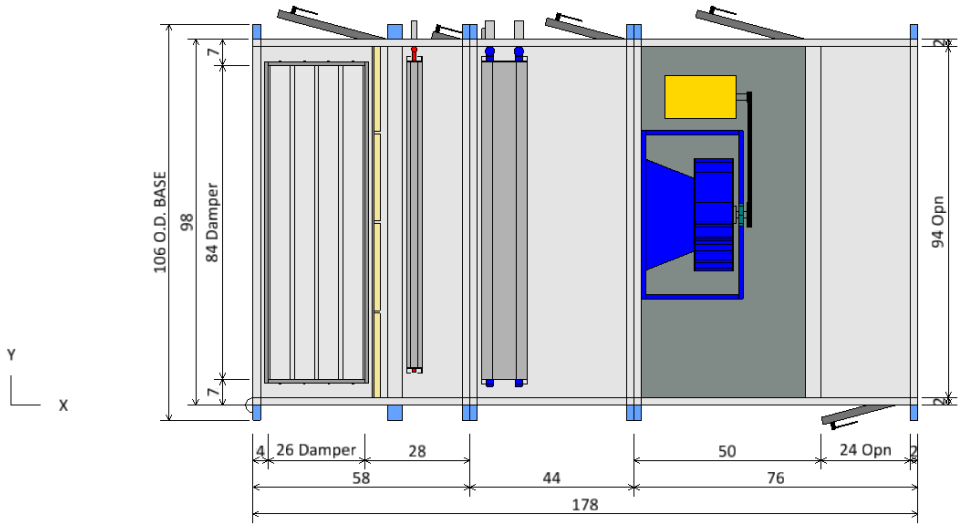


30.0" Airfoil Plenum Supply Fan at Standard Conditions					
Air volume	14600	cfm	Fan speed	1456	rpm
Total static	5.10	insWg	Max speed	1783	rpm
Fan Shaft Power	16.4	bhp	Efficiency	71.4	%
Fan Energy Index(FEI)	1.31				
Unit tagging	AHU-6B		Date	September-30-2022	
Job name	Xavier University Qatara		Time	12:47	

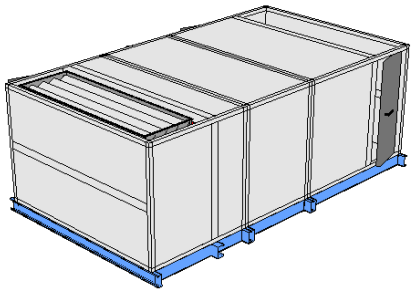
Supply fan performance is certified in accordance with the Central Station Air-Handling Unit Certification Program, which is based on AHRI Standard 430.

Drawing for AHU-6B

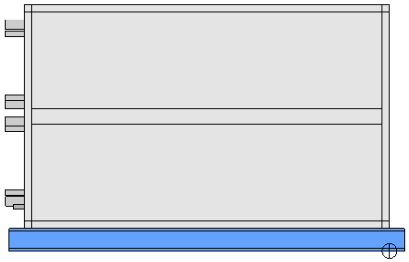
Drawing for AHU-6B



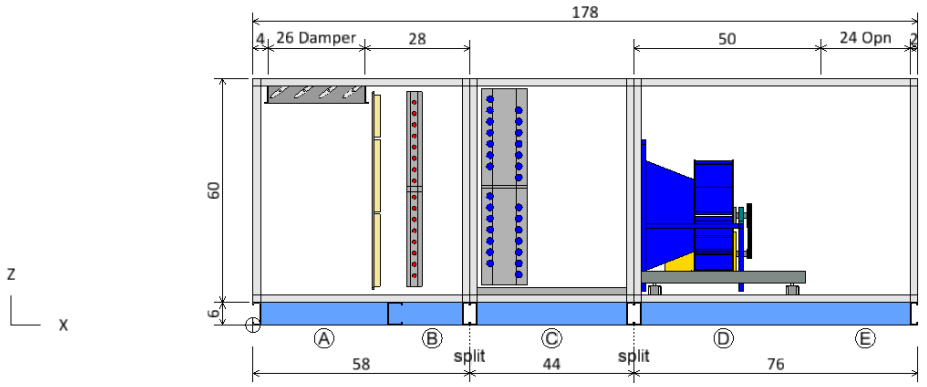
PLAN VIEW



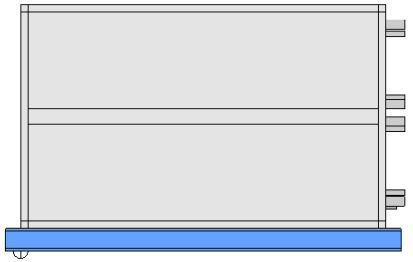
ISOMETRIC VIEW



FRONT END VIEW



ELEVATION VIEW



REAR END VIEW

Plan/Elevation	Unit Tag: AHU-6B			Sales Office: Mid-South Equipment Sales and ServicKH			DAIKIN
Product: Vision Air Handler	Project Name: Xavier University Qatara			Sales Engineer:			13600 Industrial Park Blvd, Minneapolis, MN 55441
Model: CAH031GDDM	Sept. 30, 2022	Ver/Rev:	Sheet: 1 of 1	Scale: NTS	Tolerance: +/-0.25"	Dwg Units: in	www.DaikinApplied.com Software Version: 13.00

Job Number: SLUH3J
Job Name: Xavier University Qatara

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Prepared Date: 9/30/2022

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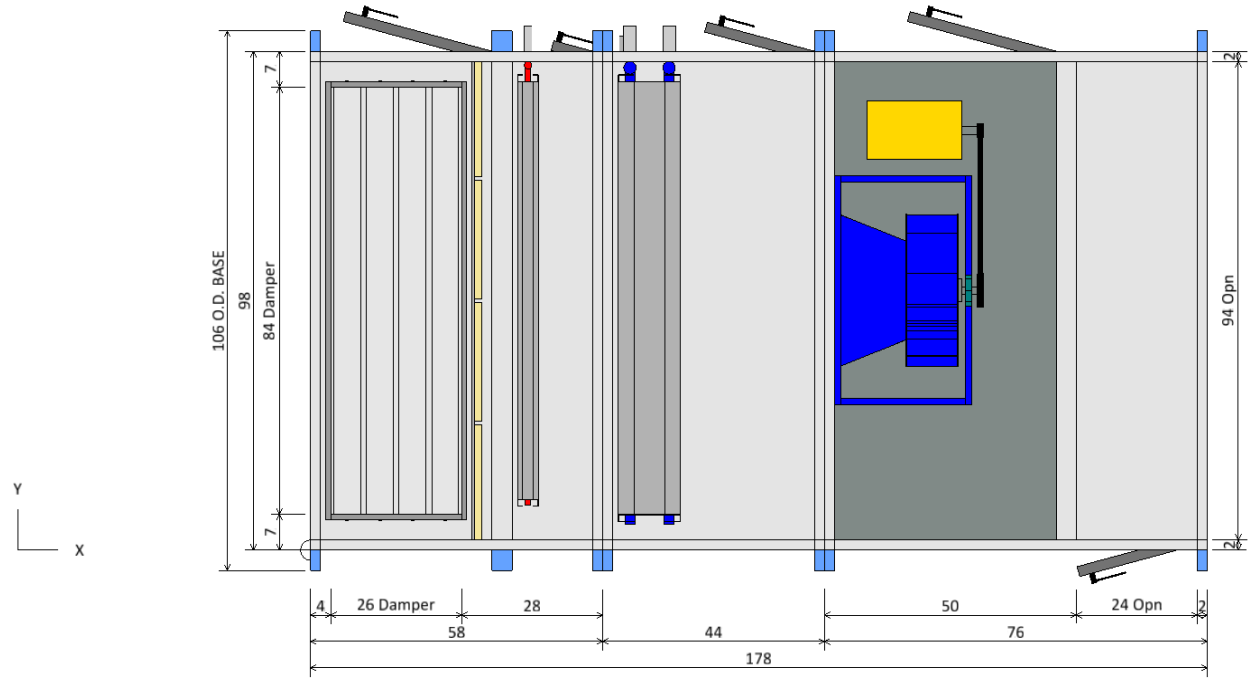
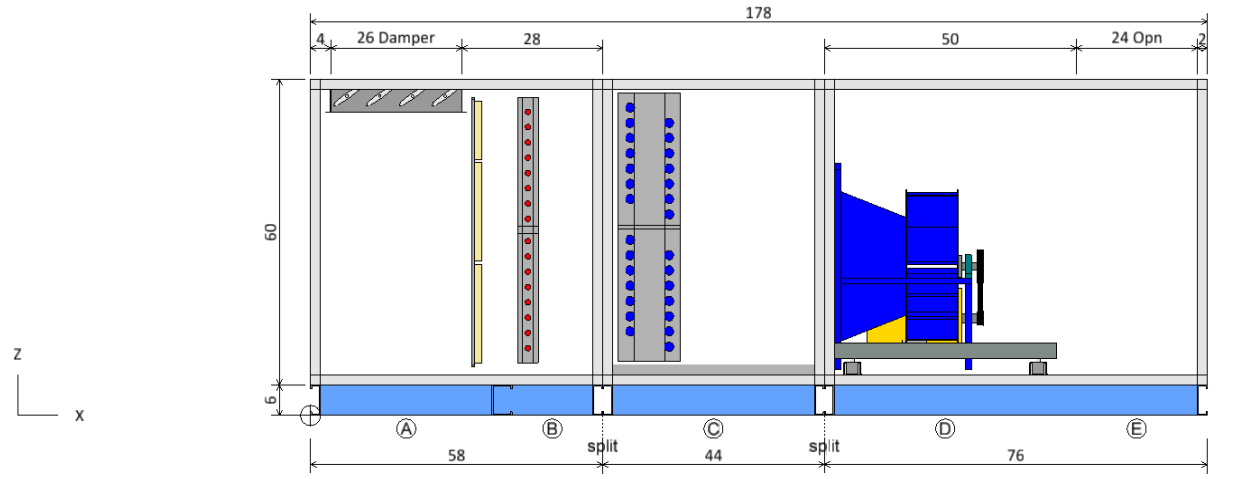
Drawing for AHU-6B



PLAN VIEW



ELEVATION VIEW

Component Key		
Ⓐ	Mixing Box	
	Filter Type:	PerfectPleat HC M8
	Left Door (WxH):	30 ins x 56 ins
Ⓑ	Hot Water Coil	
	Coil Model:	5WB1101C
	Total Capacity:	545642.0 Btu/hr
	Left Door (WxH):	8 ins x 56 ins
Ⓒ	Chilled Water coil	
	Coil Model:	5WD0908C
	Total Capacity:	1207542.0 Btu/hr
	Left Door (WxH):	22 ins x 50 ins
Ⓓ	Supply Fan	
	Fan Type:	Centrifugal - Plenum
	Fan Size (Class):	30 (2)
	Air Flowrate:	14600.0 cfm
	T.S.P:	5.1 insWg
	Motor Power:	20.0 HP
	Left Door (WxH):	30 ins x 56 ins
Ⓔ	Plenum Section	
	Opening Location:	Top
	Opening Size:	24 ins x 94 ins
	Right Door (WxH):	20 ins x 56 ins

Plan/Elevation - No Ends	Unit Tag: AHU-6B			Sales Office: Mid-South Equipment Sales and ServicKH		
Product: Vision Air Handler	Project Name: Xavier University Qatara			Sales Engineer:		
Model: CAH031GDDM	Sept. 30, 2022	Ver/Rev:	Sheet: 1 of 1	Scale: NTS	Tolerance: +/-0.25"	Dwg Units: in

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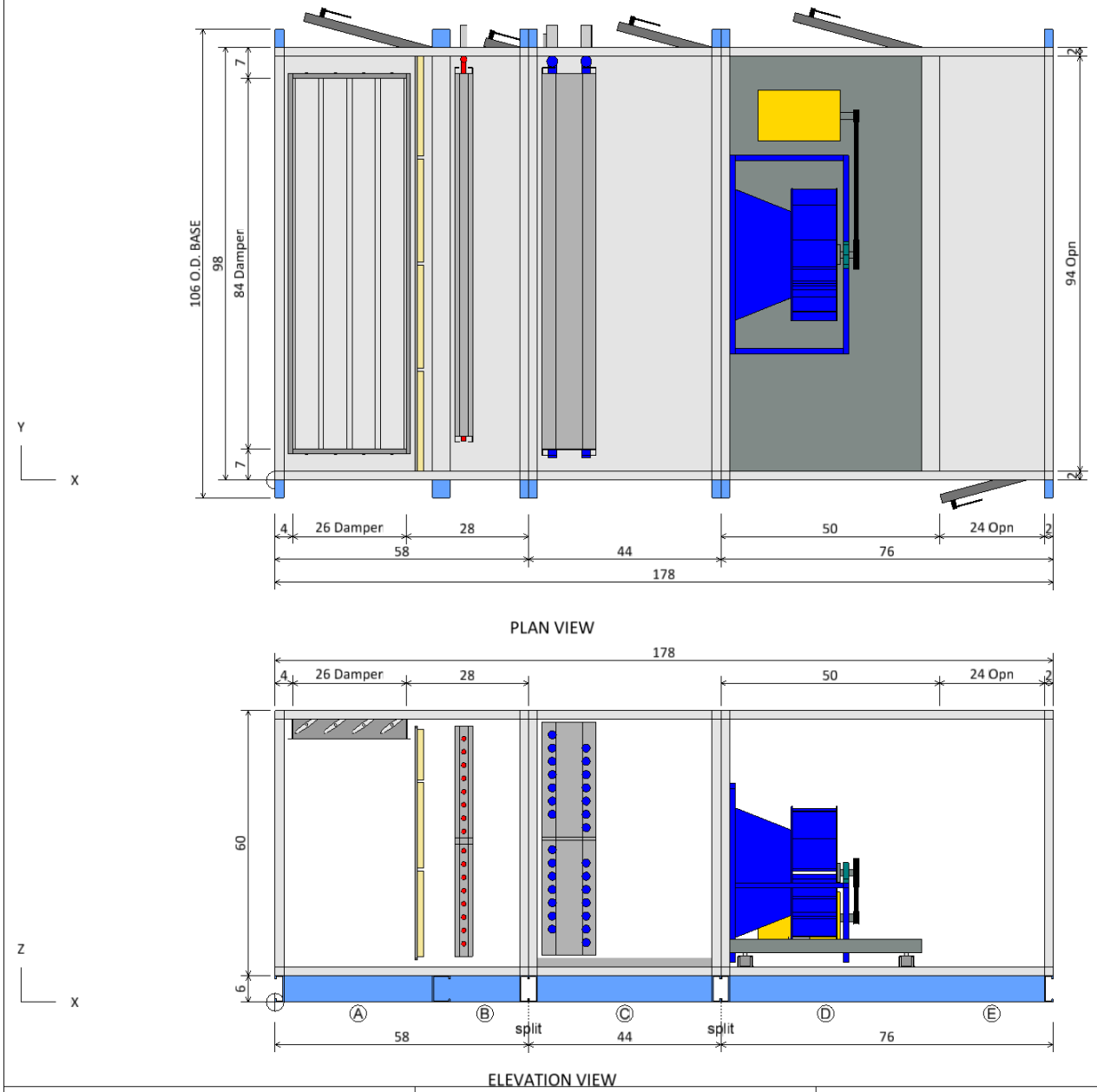
Drawing for AHU-6B

Job Number: SLUH3J
Job Name: Xavier University Qatara



Component Key

	Type	X	Y	Z	Wid	Hgt
Ⓐ	Mixing Box Outside air damper	4.00	7.00	66.00	84.00	26.00
Ⓔ	Plenum Section Opening	152.00	2.00	66.00	94.00	24.00

Note: Dimensions are measured from the origin point.

Opening/Damper Connections	Unit Tag: AHU-6B			Sales Office: Mid-South Equipment Sales and ServicKH		
Product: Vision Air Handler	Project Name: Xavier University Qatara			Sales Engineer:		
Model: CAH031GDDM	Sept. 30, 2022	Ver/Rev:	Sheet: 1 of 1	Scale: NTS	Tolerance: +/-0.25"	Dwg Units: in

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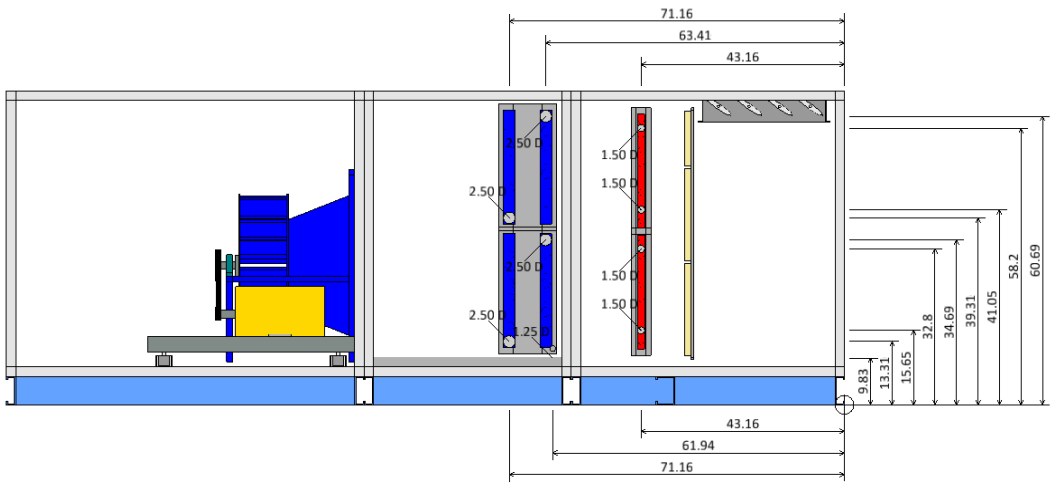
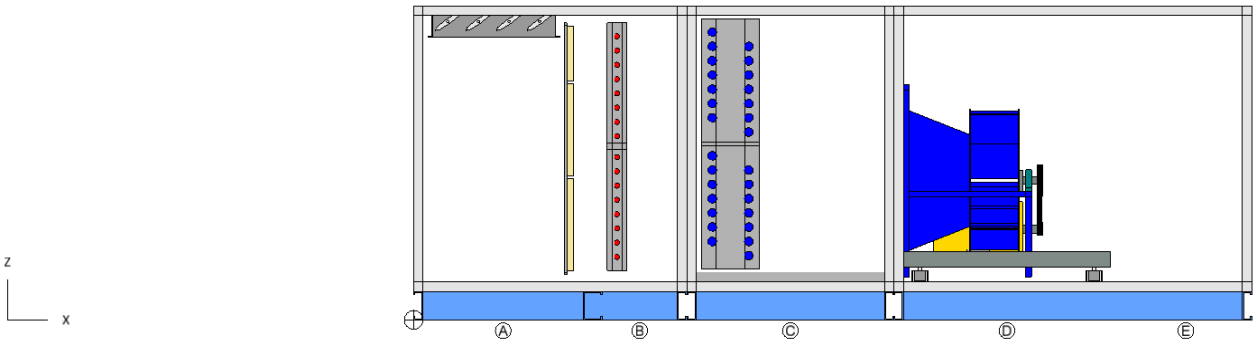


LEFT ELEVATION VIEW



RIGHT ELEVATION VIEW

Coil and Drain Connections

	Type	X	Y	Z	Diam
Ⓑ	Hot Water Coil				
	Hot water inlet:	43.16	101.00	15.65	1.50
	Hot water outlet:	43.16	101.00	32.80	1.50
	Hot water inlet:	43.16	101.00	41.05	1.50
	Hot water outlet:	43.16	101.00	58.20	1.50
Ⓒ	Chilled Water coil				
	Condensate drain conn:	61.94	98.90	11.83	1.25
	Cold water inlet:	71.16	101.00	13.31	2.50
	Cold water outlet:	63.41	101.00	34.69	2.50
	Cold water inlet:	71.16	101.00	39.31	2.50
	Cold water outlet:	63.41	101.00	60.69	2.50

Note: Dimensions are measured from the origin point.

Coil and Drain Connections	Unit Tag: AHU-6B			Sales Office: Mid-South Equipment Sales and ServicKH		
Product: Vision Air Handler	Project Name: Xavier University Qatara			Sales Engineer:		
Model: CAH031GDDM	Sept. 30, 2022	Ver/Rev:	Sheet: 1 of 1	Scale: NTS	Tolerance: +/-0.25"	Dwg Units: in

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Prepared Date: 9/30/2022

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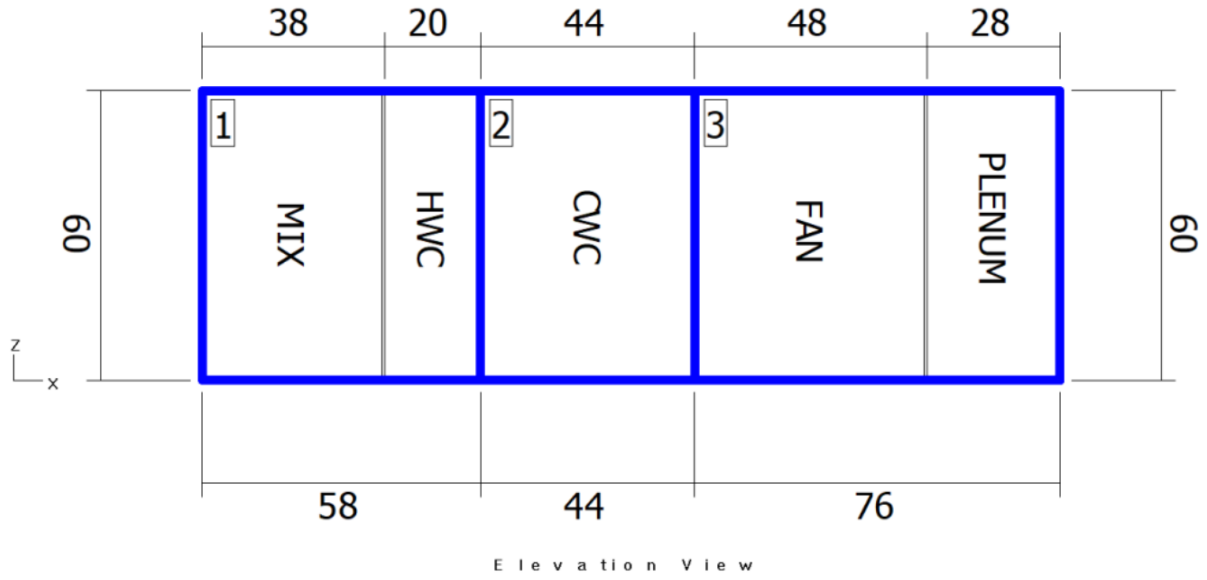
Drawing for AHU-6B



Elevation View

Shipping Sections

Section	Weight (lb)	X	Y	Z
Section 1	1129.74	58	98	60
Section 2	1727.88	44	98	60
Section 3	2035.38	76	98	60
Total Unit	4893.00	178	98	60

Note: Base rails, curb ready base, coil connectors, drain connectors, and control boxes not included in height X, Y, Z dimensions.
Shipping section may be 2" longer in air flow direction due to internal splice joint.

Shipping Sections	Unit Tag: AHU-6B			Sales Office: Mid-South Equipment Sales and ServicKH		
Product: Vision Air Handler	Project Name: Xavier University Qatara			Sales Engineer:		
Model: CAH031GDDM	Sept. 30, 2022	Ver/Rev:	Sheet: 1 of 1	Scale: NTS	Tolerance: +/-0.25"	Dwg Units: in

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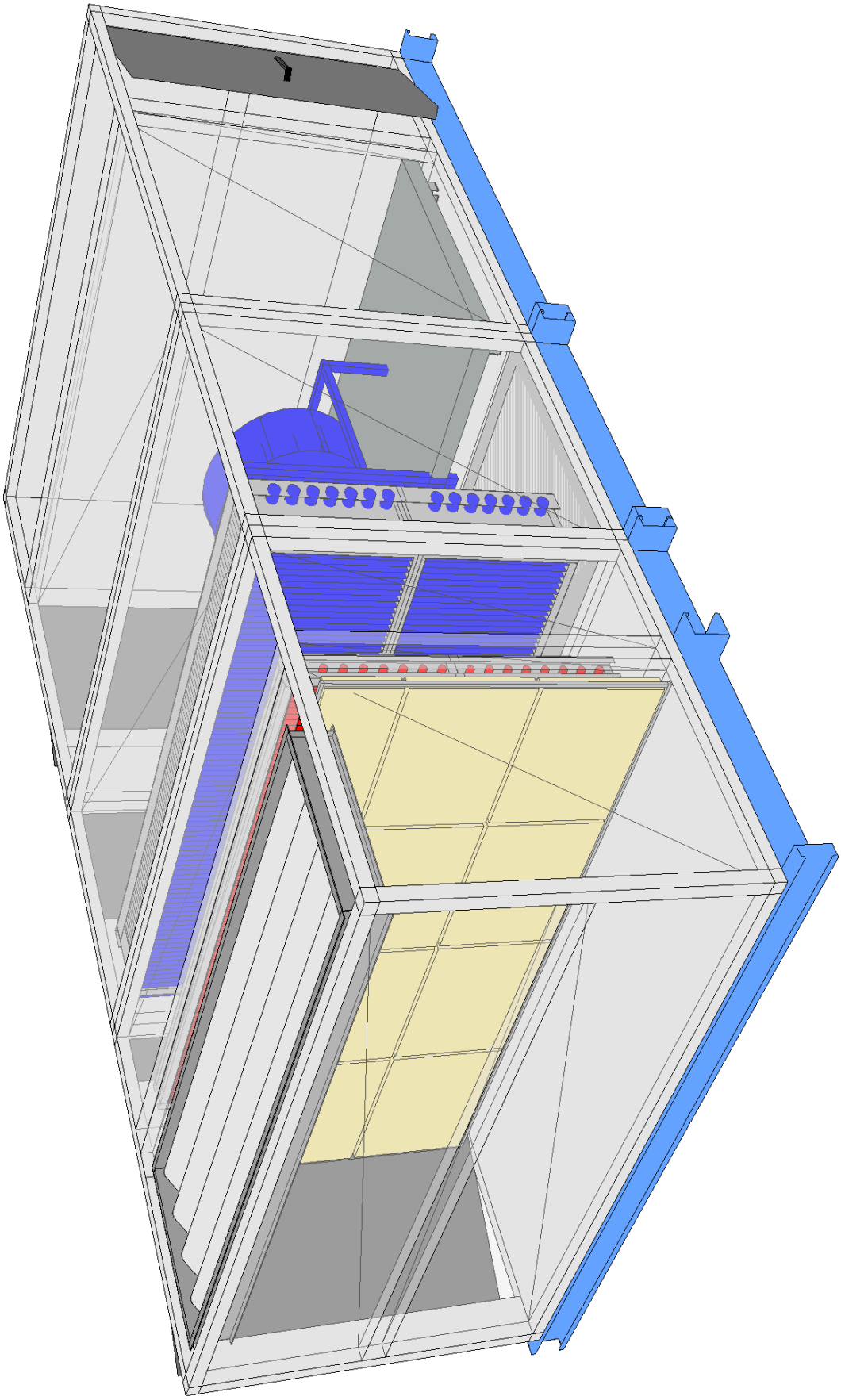
Drawing for AHU-6B



Product Drawing	Unit Tag: AHU-6B	Sales Office: Mid-South Equipment Sales and ServicKH	DAIKIN
Product: Vision Air Handler	Project Name: Xavier University Qatara	Sales Engineer:	13600 Industrial Park Blvd, Minneapolis, MN 55441
Model: CAH031GDDM	Sept. 30, 2022 | Ver/Rev: | Sheet: 1 of 1	Scale: NTS | Tolerance: +/-0.25" | Dwg Units: in	www.DaikinApplied.com Software Version: 13.00

Drawing for AHU-6B

Document Summary Page


Repair collapsed
outside air duct

AHU-1 heat wheel

AIR HANDLING UNIT TECHNICAL DATA

Date Saved : 2/15/2009

3 Energy Recovery Section (16 ins)

SECTION 3

Heat Wheel Model	ECW 486		Exhaust air CFM	4250	CFM
Media Type	Fiber		Electrical Supply Volt	115/60/1	Volt
Wheel Diameter	48.00	ins	Bypass Damp Opening	No Bypass	ins
Supply air CFM	5535	CFM	Supply air PD Sum/Win	1.46 / 1.34	ins WC
Supply air FV Sum/Win	1025 / 1022	ft/min	Return air CFM	4250	CFM
Return air PD Sum/Win	1.09 / 1.01	ins WC	Outdoor air CFM	5535	CFM
Segmented Wheel	No		Motor HP	0.5	
Summer Conditions			**Winter Conditions**		
Outside air DB	94.0	F	Outside air DB	27.0	F
Outside air WB	77.8	F	Outside air WB	26.0	F
Return air DB	75.0	F	Return air DB	72.0	F
Return air WB	62.8	F	Return air WB	53.8	F
Supply air DB	83.7	F	Supply air DB	51.3	F
Supply air WB	70.9	F	Supply air WB	42.5	F
Exhaust air DB	88.6	F	Exhaust air DB	39.7	F
Exhaust air WB	74.0	F	Exhaust air WB	35.4	F
Latent effectiveness	70.03	%	Latent effectiveness	70.03	%
Sensible effectiveness	74.45	%	Sensible effectiveness	74.45	%
Total effectiveness	71.80	%	Total effectiveness	73.57	%
Total Energy Recovered	167546	Btu/hr	Total Energy Recovered	175000	Btu/hr

4 RETURN/EXHAUST FAN SECTION(42 ins)

SECTION 1

Air volume	4250	cfm	Motor power	3.0	HP
External static pressure	0.50	ins WC	Motor type	ODP	
Total static pressure	2.21	ins WC	Frame size	182 T frame	
			Electrical supply	460/60/3	
			Motor efficiency	Premium	
Type	Centrifugal		Motor speed	1750	rpm
Blade type/Class	Forward curved / 2		Motor pole	4	
Fan wheel diameter	15.00	ins	Full load current	4	A
Brake horsepower	2.53	HP	Lock rotor current	32	A
Operating/Max speed	1022 / 1725	rpm	Motor supplier	Generic	
Orientation	Up blast CW		Actual drive service fac.	1.21	
Air modulation	None		Bearing type	Standard - L50 (200K)	
Drip pan	None		Outlet velocity	2053	ft/m
Drip pan side	-		Inlet screen	None	
Wheel guard	None		Outlet screen	None	
Belt guard	None				
Inspection port	None				

DRIVES

Fan sheave	AK71H	Motor sheave	AK44H
Number of belts	1	Belt	A38

ANTI-VIBRATION MOUNTS / SPRINGS

Type	Spring
Seismic restraint	None

DOOR DATA

Door location	Drive side		Window size	None
Door width	30	ins	Light	None
Door opening	Outward			

Supply Air Stream

AHU-2 heat wheel

AIR HANDLING UNIT TECHNICAL DATA

Date Saved : 2/16/2009

3 Energy Recovery Section (20 ins)

SECTION 3

Heat Wheel Model	ECW 546		Exhaust air CFM	5100	CFM
Media Type	Fiber		Electrical Supply Volt	115/60/1	Volt
Wheel Diameter	54.00	ins	Bypass Damp Opening	No Bypass	ins
Supply air CFM	6610	CFM	Supply air PD Sum/Win	1.30 / 1.20	ins WC
Supply air FV Sum/Win	914 / 911	ft/min	Return air CFM	5100	CFM
Return air PD Sum/Win	0.98 / 0.90	ins WC	Outdoor air CFM	6610	CFM
Segmented Wheel	No		Motor HP	0.75	

Summer Conditions			Winter Conditions		
Outside air DB	94.0	F	Outside air DB	27.0	F
Outside air WB	77.8	F	Outside air WB	26.0	F
Return air DB	75.0	F	Return air DB	72.0	F
Return air WB	62.8	F	Return air WB	53.8	F
Supply air DB	83.3	F	Supply air DB	52.3	F
Supply air WB	70.6	F	Supply air WB	43.1	F
Exhaust air DB	89.1	F	Exhaust air DB	38.6	F
Exhaust air WB	74.3	F	Exhaust air WB	34.6	F
Latent effectiveness	73.23	%	Latent effectiveness	73.23	%
Sensible effectiveness	77.38	%	Sensible effectiveness	77.38	%
Total effectiveness	74.90	%	Total effectiveness	76.55	%
Total Energy Recovered	208540	Btu/hr	Total Energy Recovered	217000	Btu/hr

4 RETURN/EXHAUST FAN SECTION(46 ins)

SECTION 1

Air volume	5100	cfm	Motor power	3.0	HP
External static pressure	0.50	ins WC	Motor type	ODP	
Total static pressure	2.09	ins WC	Frame size	182 T frame	
			Electrical supply	460/60/3	
Type	Centrifugal		Motor efficiency	Premium	
Blade type/Class	Forward curved / 2		Motor speed	1750	rpm
Fan wheel diameter	18.03	ins	Motor pole	4	
Brake horsepower	2.86	HP	Full load current	4	A
Operating/Max speed	831 / 1450	rpm	Lock rotor current	32	A
Orientation	Up blast CW		Motor supplier	Generic	
Air modulation	None		Actual drive service fac.	1.31	
Drip pan	None		Bearing type	Standard - L50 (200K)	
Drip pan side	-		Outlet velocity	1765	ft/m
Wheel guard	None		Inlet screen	None	
Belt guard	None		Outlet screen	None	
Inspection port	None				

DRIVES

Fan sheave	1B5V64	Motor sheave	BK32H
Number of belts	1	Belt	BX41

ANTI-VIBRATION MOUNTS / SPRINGS

Type	Spring
Seismic restraint	None

DOOR DATA

Door location	Drive side		Window size	None
Door width	30	ins	Light	None
Door opening	Outward			

Supply Air Stream


Changer existing heat recovery coil and provide filter rack


Replace existing heat
recovery coil and
provide new filter rack


Replace existing heat recovery coil and provide filter rack


Provide new duct attachment to louver that is the full width of the heat recovery coil and filter rack. Widen duct on both sides, typical.
Replace AHU 6A&6B heat recovery coil
Provide filter rack