

Destiny™ Air Handler



Job Information		Technical Data Sheet
Job Name	Webster Univ Science Bldg	
Date	5/25/2016	
Submitted By	Thermal Mechanics, Inc.	
Software Version	05.20	
Unit Tag	AHU-5	



Unit Overview					
Model Number	Voltage V/Hz/Phase	Airflow CFM	Static Pressure		Unit Configuration
			External inH ₂ O	Total inH ₂ O	
LAH015A	460/60/3	5000	1.50	2.44	Horizontal

Unit	
Model Number:	LAH015A
Type:	Indoor Air Handler
Configuration:	Horizontal
Construction:	Double-wall construction with foam injected insulation
Approval:	AHRI, ETL, CETL & MEA

Physical				
Unit				
Length	Height	Width	Weight	
70.9 in	39.4 in	74.4 in	944.8 lb	
Unit Construction				
Outer Panel	Inner Liner	Insulation	Frame	Access
Galvanized Steel	Galvanized steel	1 inch Expanded Foam	1 inch Aluminum	Hinged access; Both side filter and fan

Filter					
Type	Face Area	Filter Face Velocity	Air Pressure Drop	Air Pressure Drop Type	(Quantity) H x W x D
Pleated (MERV 8)	16.9 ft ²	295.5 ft/min	0.59 inH ₂ O	Mean Pressure Drop	(3) 12 in x 24 in x 2 in (3) 24 in x 24 in x 2 in

Chilled Water Cooling Coil						
Physical						
Fins per Inch	Rows	Face Area	Face Velocity	Fin Height	Fin Length	Air Pressure Drop
12	6	14.7 ft²	340.8 ft/min	32.5 in	65.0 in	0.35 inH₂O
Material						
Fin		Tube	Header		Casing	
.0060 in Aluminum		.016 in Copper	Copper		Stainless steel casing	
Connection Size		Connection Type		Connection Location		
2.0 in NPT		Steel NPT		Left Hand		
Drain Pan Material		Drain Pan Connection		Drain Pan Secondary Connection		
Stainless steel		1 1/4 in ID MPT		1/2 in ID MPT		
Performance						
Capacity		Air Temperature				
Total Btu/hr	Sensible Btu/hr	Entering Dry Bulb °F	Entering Wet Bulb °F	Leaving Dry Bulb °F	Leaving Wet Bulb °F	
138182	138182	85.0	60.0	59.7	49.7	
Fluid						
Type	Entering Temperature	Leaving Temperature	Flow Rate gpm	Pressure Drop ft H₂O	Velocity ft/min	
Water	56.0	63.5	37.0	3.4	2.4	

Supply Fan

Fan						
Type	Class	Wheel Diameter	Orientation		Vibration Isolation	
Plenum	Class 1	20 in	Horizontal - Plenum fan		1" Spring	
Motor						
Horsepower	Type	Efficiency	V/Hz/Phase	Full Load Current	Drive Side	VFD
5 HP	Open Drip Proof	89.5 %	460/60/3	6.6 A	Direct Drive	57 Hz
Performance						
Air Flow CFM	Total Static Pressure inH ₂ O	Fan Speed RPM	Brake Horsepower HP	Outlet Velocity ft/min		Altitude ft
5000	2.44	1676	3.02	270		500

Sound

Sound Power (db)							
Frequency	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz
Inlet	79	88	82	73	73	68	70
Discharge	83	93	88	80	80	77	73
Radiated	78	81	73	64	64	58	51

Internal Pressure Drop Calculation

Cooling Coil:	0.35 inH ₂ O
Filter:	0.59 inH ₂ O
Total Internal Pressure Drop:	0.94 inH ₂ O

Options

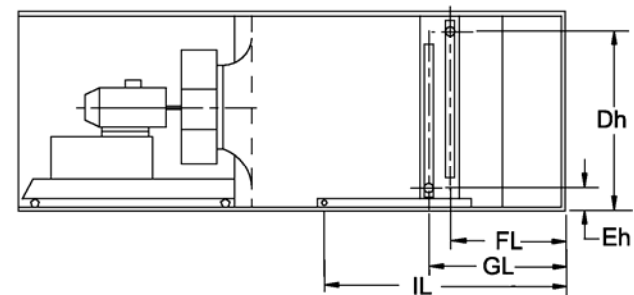
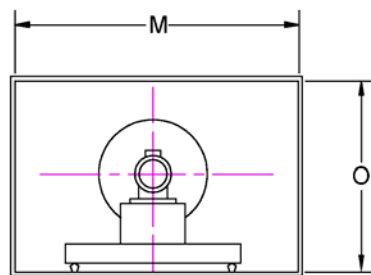
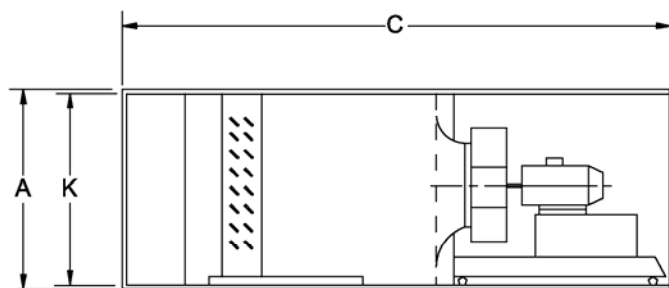
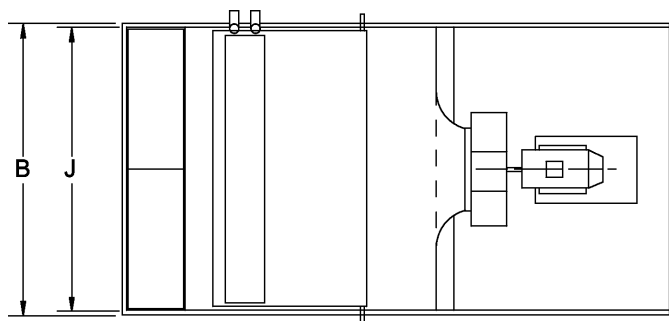
Unit	
Inverter:	VFD (Inverter)
Filter Gauge:	Filter Gauge in External Box
Marine Light / GFI Outlet:	Marine Light, GFI Outlet in Fan Section

AHRI Certification

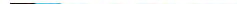
Error! Objects cannot be created from editing field codes.

All equipment is rated and certified in accordance with AHRI 430.

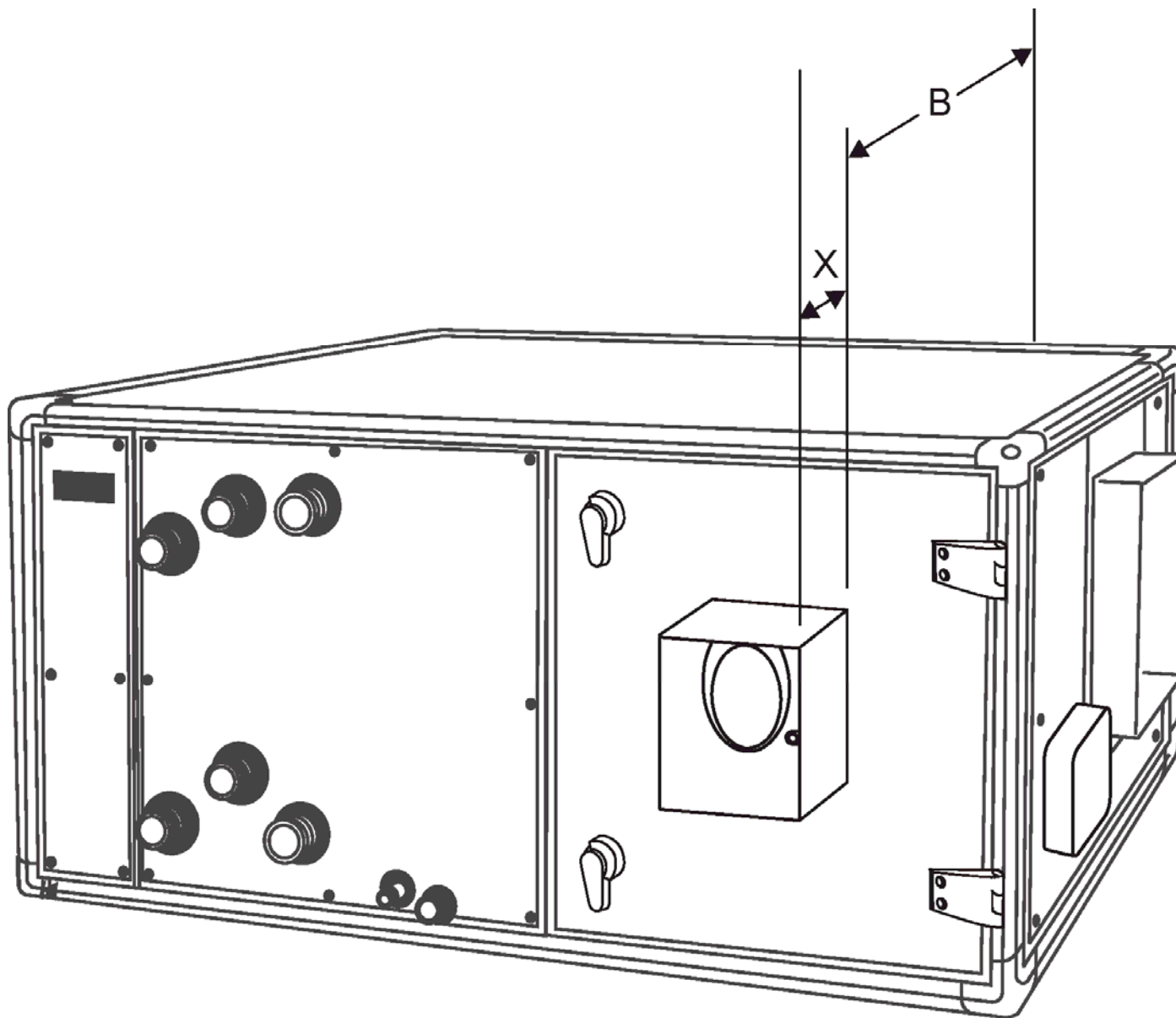
Notes



Dimensions		
Description	Letter	Dimension (in)
Unit Height	A	39.37
Unit Width	B	74.4
Unit Length	C	70.86
Coil 1 (Water Return) (DX Suction) Connection	D _L	11.76
Coil 1 (Water Return) (DX Suction) Connection	D _H	32.53
Coil 1 (Water Supply) (DX Liquid) Connection	E _L	17.18
Coil 1 (Water Supply) (DX Liquid) Connection	E _H	5.83
Drain Connection - Secondary	H _L	24.49
	H _H	2.48
Drain Connection - Primary	I _L	27.24
	I _H	1.8
Return Opening Width	J	72.05
Return Opening Height	K	37.01
Discharge Opening Width	M	72.05
Discharge Opening Height	O	37.01
Inverter Depth	X	5.91

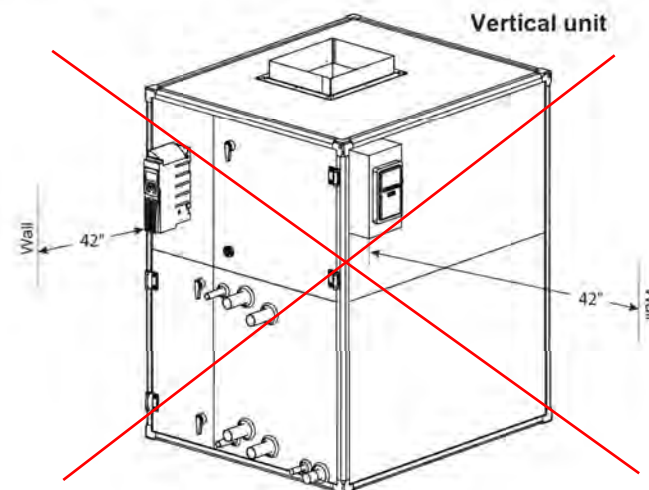
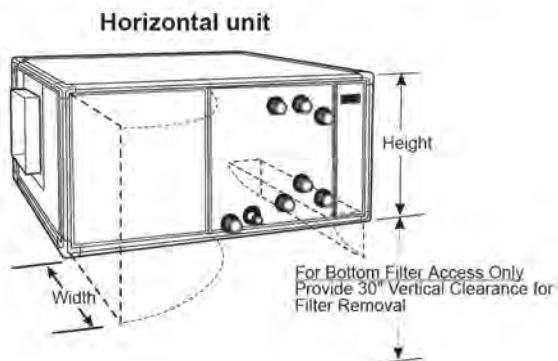
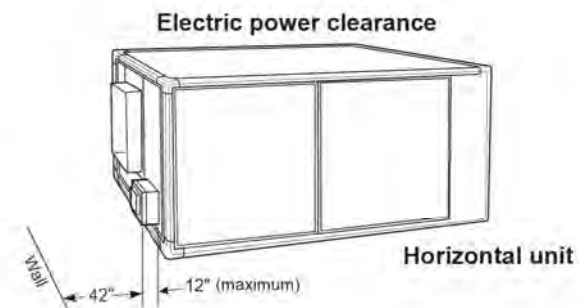
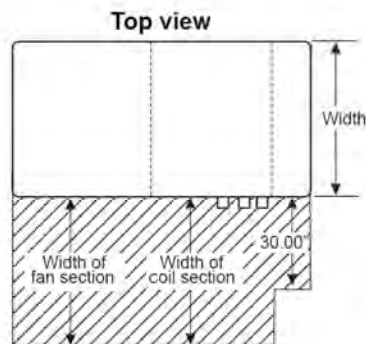
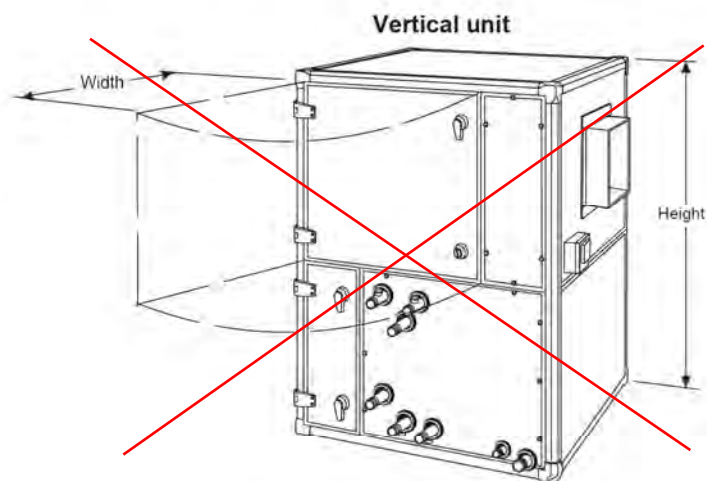
Product Drawing	Unit Tag: AHU-5			Sales Office: Thermal Mechanics, Inc. (St. Louis)			 13600 Industrial Park Blvd. Minneapolis, MN 55441 www.DaikinApplied.com Software Version: 05.20
Product:	Project Name: Webster Univ Science Bldg			Sales Engineer:			
Model: LAH015A	May 25, 2016	Ver/Rev:	Sheet: 1 of 1	Scale: NTS	Tolerance: +/- 0.25"	Dwg Units: (in)	

No change to this drawing may be made unless approved in writing by Daikin Applied. Purchaser must determine that the equipment is fit and sufficient for the job specifications.



Product Drawing	Unit Tag: AHU-5			Sales Office: Thermal Mechanics, Inc. (St. Louis)			 13600 Industrial Park Blvd. Minneapolis, MN 55441 www.DaikinApplied.com Software Version: 05.20
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Product Drawing

Product:

Model: LAH015A

Unit Tag: AHU-5

Project Name: Webster Univ Science Bldg

May 25, 2016

Ver/Rev:

Sheet: 1 of 1

Sales Office: Thermal Mechanics, Inc. (St. Louis)

Sales Engineer:

Scale: NTS

Tolerance: +/- 0.25"

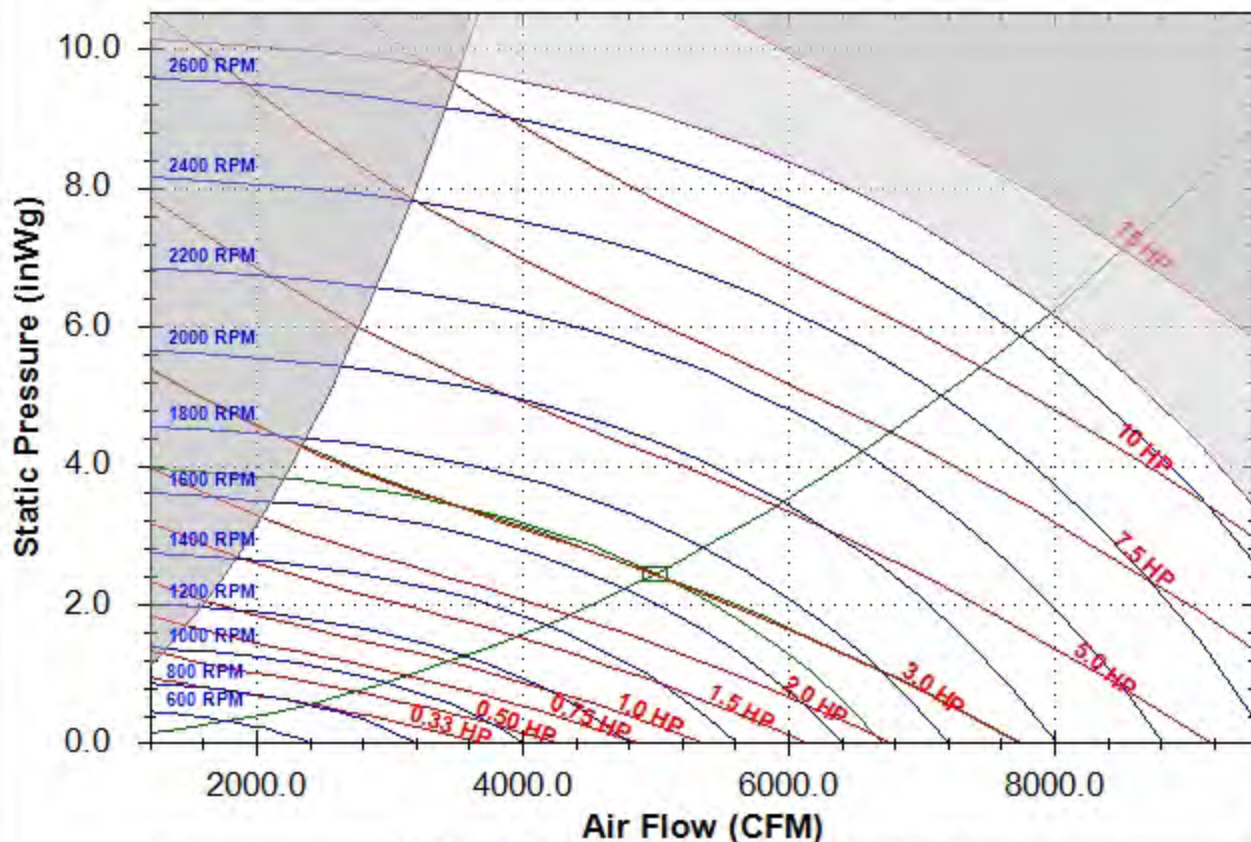
Dwg Units: in [mm]



13600 Industrial Park Blvd. Minneapolis, MN 55441
www.DaikinApplied.com Software Version: 05.20

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Daikin Destiny Fan Selection



20.0 SWSI - BI Plenum Supply Fan at Standard Conditions

Base Tag	AHU-5				Date	May-25-2016			
Job Name	Webster Univ Science Bldg				Time	7:50 AM			
Air Volume	5000	CFM			Fan Speed	1676	RPM		
Total Static	2.44	inWg			Max Speed	2675	RPM		
Brake Horsepower	3.02	HP			Efficiency	63.5	%		
Unit Sound Power		63hz	125hz	250hz	500hz	1000hz	2000hz	4000hz	8000hz
Inlet Sound Power		77	79	88	82	73	73	68	70
Outlet Sound Power		84	83	93	88	80	80	77	73
Radiated Sound Power		84	78	81	73	64	64	58	51





THERMAL MECHANICS, INC.

715 GODDARD AVENUE, CHESTERFIELD, MO 63005

VOICE (636) 532-1110

FAX (636) 532-7318

DATE: May 26, 2016

MAB

EQUIPMENT SUBMITTAL – REVISION “1”

PRODUCTION ON HOLD FOR APPROVAL

Production is on HOLD and will not be released or scheduled until receipt of approved submittals noting any changes required.

Manufacturer: **Daikin Applied**

Equipment: ***Air Handling Unit, tag AHU-5***

Spec Section:

Job Name: **Webster University
Interdisciplinary Science Building**

Engineer: **William Tao & Associates**

Contractor: **Icon Mechanical**
Purchase Order #: **To Follow**

TMI Ref #: To follow

Contact: Jason Hibbits

Webster University Interdisciplinary Science Building

Tag	Model	Supply Fan													Filter		
		Type	Qty	Fan Dia. (in.)	Class	Airflow (CFM)	Fan RPM	BHP	E.S.P. (inH2O)	T.S.P. (inH2O)	Motor Voltage	Motor Power (HP)	Motor RPM	Motor Control	Type	Depth (in.)	Mean P.D. (inH2O)
AHU-5	LAH015A	DDPL-20	1	20	2	5000	1676	3.02	1.50	2.44	460/60/3	5	1750	VFD	MERV 8	2	0.59

Tag	Cooling Coil														
	Design Airflow (CFM)	Face Velocity (fpm)	Total Capacity (Btu/hr)	Sensible Capacity (Btu/hr)	EDB (°F)	EWB (°F)	LDB (°F)	LWB (°F)	Air P.D. (inH2O)	EWT (°F)	LWT (°F)	Flow Rate (GPM)	Fluid P.D. (ftH2O)	FPI	Rows
AHU-5	5000	341	138182	138182	85.0	60.0	59.7	59.7	0.35	56.0	63.5	37.0	3.4	12	6

Notes:

- Performance is based on an elevation of 500 feet

PART 1: GENERAL

1.01 SECTION INCLUDES

- A. Air handling units.

1.02 REFERENCES

- A. AFBMA 9 - Load Ratings and Fatigue Life for Ball Bearings.
- B. AMCA 99 - Standards Handbook.
- C. AMCA 210 - Laboratory Methods of Testing Fans for Rating Purposes.
- D. AMCA 300 - Test Code for Sound Rating Air Moving Devices.
- E. AMCA 500 - Test Methods for Louver, Dampers, and Shutters.
- F. ARI 410 - Forced-Circulation Air-Cooling and Air-Heating Coils.
- G. ARI 430 - Central-Station Air-Handling Units.
- H. ARI 435 - Application of Central-Station Air-Handling Units.
- I. ASTM B117 - Standard Practice for Operating Salt Spray Apparatus.
- J. NEMA MG1 - Motors and Generators.
- K. NFPA 70 - National Electrical Code.
- L. SMACNA - HVAC Duct Construction Standards - Metal and Flexible.
- M. UL 723 - Test for Surface Burning Characteristics of Building Materials.
- N. UL 900 - Test Performance of Air Filter Units.
- O. UL 1995 - Standard for Heating and Cooling Equipment.
- P. UL 94 - Test for Flammability of Plastic Materials for Parts in Devices and Appliances.

1.03 SUBMITTALS

- A. Shop Drawings: Indicate assembly, unit dimensions, weight loading, required clearances, construction details, field connection details, and electrical characteristics and connection requirements. Computer generated fan curves for each air handling unit shall be submitted with specific design operating point noted. A computer generated psychometric chart shall be submitted for each cooling coil with design points and final operating point clearly noted.
- B. Product Data.
 - 1. Provide literature that indicates dimensions, weights, capacities, ratings, fan performance, gauges and finishes of materials, and electrical characteristics and connection requirements.
 - 2. Provide data of filter media, filter performance data, filter assembly, and filter frames.
 - 3. Manufacturer's Installation Instructions.

1.04 OPERATION AND MAINTENANCE DATA

- A. Maintenance Data: Include instructions for lubrication and filter, motor, and drive replacement.

1.05 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing Air Handler products specified in this section must show a minimum five years documented experience and complete catalog data on total product.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store, protect and handle products to site.
- B. Accept products on site on factory-installed shipping skids. Inspect for damage.
- C. Store in clean dry place and protect from weather and construction traffic. Handle carefully to avoid damage to components, enclosures, and finish.

1.07 ENVIRONMENTAL REQUIREMENTS

- A. Do not operate units for any purpose, temporary or permanent, until ductwork is clean, filters are in place, bearings lubricated, and fan has been test run under observation.

PART 2: PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

- A. Daikin Applied - 'Destiny' Air Handler is the basis of design.

2.02 AIR HANDLER TYPE AND ARRANGEMENT

- A. The air handler shall be furnished as a horizontal draw-through cooling coil only type.

2.03 AIR HANDLER CASING

- A. Air handler casing shall be constructed with a corrosion resistant aluminum frame with 1" thick, double wall panels. Extruded aluminum frame and polymeric corner pieces are required for casing protection and rigidity. Unit panels shall consist of injected polyurethane foam insulation sandwiched between galvanized steel exterior and interior sheets. Formed "thermal break" panels shall have a plastic molded edge to eliminate inner and outer panels from contacting each other.
 - 1. Panels shall be fastened to frame with perimeter screws with a neoprene gasket in-between the panel and the frame to minimize air leakage and prevent thermal bridging from unit interior to unit exterior. Hinged and latched access panels for blower and filter sections shall be furnished on both the drive & opposite drive side to allow access to unit interior. Blower panel shall be furnished two, quarter-turn open-to-close, latch assemblies, one tooled flathead screw type and one with lever handle operation. Filter access panels shall be provided with hinges and two, quarter-turn open-to-close latch assemblies on the drive & opposite side only.

2.04 SUPPLY FAN

- A. The supply fan shall be a SWSI direct-drive backward-inclined plenum fan type. Fan assembly including fan and motor shall be dynamically balanced by the manufacturer on all three planes. Manufacturer must ensure maximum fan RPM is below the first critical speed. Fan variable frequency drive shall control the fan speed from a minimum of 20Hz and shall not exceed 90Hz.
- B. Fan and motor assembly shall be mounted on vibration type isolators inside cabinetry.
- C. Units shall be certified in accordance with the central station air handling units certification program that is based on ARI Standard 430.

2.05 BEARINGS AND DRIVES

- A. Basic load rating computed in accordance with AFBMA - ANSI Standards, L-50 life at 200,000 hours heavy duty pillow block type, self-aligning, grease-lubricated ball bearings.
- B. Shafts shall be solid, hot rolled steel, ground and polished, keyed to shaft, and protectively coated with lubricating oil.

2.06 ELECTRICAL

- A. Motor shall be a premium efficiency open drip-proof type. Electrical characteristics shall be as shown on the schedule.
- B. A variable frequency drive with junction box shall be furnished and mounted by fan manufacturer for field power connection.

2.07 COOLING AND HEATING SECTIONS

- A. Access to coils for service and cleaning shall be provided. Coil headers and return bends shall be fully encased within unit casing. Coil connections shall be factory sealed with grommets on interior and exterior

and gasket sleeve between outer wall and inner liner where each pipe extends through the unit casing to minimize air and condensate leakage.

B. Cooling Coils.

1. Cooling performance shall be as specified on the unit schedule.
2. Water coil fins shall have full drawn collars to provide a continuous surface cover over the entire tube for maximum heat transfer. Seamless copper tubes shall be mechanically expanded into the fins to provide a continuous primary-to-secondary compression bond over the entire finned length for maximum heat transfer rates. Bare copper tubes shall not be visible between fins. Coil casing shall be constructed of stainless steel.
3. Water coils shall be provided with headers of seamless copper tubing with intruded tube holes to permit expansion and contraction without creating undue stress or strain. Coil connections shall be carbon steel connections with connection size to be determined by manufacturer based upon the most efficient coil circuiting. Vent and drain connections shall be furnished on the coil connection, external to the cabinet. Vent connections provided at the highest point to assure proper venting. Drain connections shall be provided at the lowest point.
4. Drainpan shall be constructed from stainless steel, pitched and sloped in direction of airflow to drain connection to allow for condensate drainage. Drainpan shall be positioned above 1" thick insulated double wall panel. Condensate drain connections shall be provided on both sides of drain pan. Secondary drain connection shall be provided.
5. Coil casing shall be constructed of Stainless steel.

2.08 FILTER SECTION

- A. Filter section shall be a 2-inch deep flat type furnished with MERV 8 pleated type filter.
- B. Filter media shall be UL 900 listed, Class I or Class II.

PART 3: EXECUTION

3.01 INSTALLATION

- A. The air handler shall be installed per manufacturer's Installation & Maintenance instructions.

Shop Drawing Submittal Review

Transmitted To: Cannon Design

Date: August 2, 2016

Attention: stl-cac@cannondesign.com

Contact Person / WTA Field Inspector:
Patrick Garner

Project Name: Webster University-**ISB**

Reviewed by: Mark Schaefer
Mike Nolte

Project No. WT 14127.01

☐ UPS ☐ Courier ☒ **Email**

Copies	No.	Description
1 PDF	235000M06X	(Submittal No. 235000-006)-(CxSRC-015)
		• Air Handler 5 Product Data (AHU-5)

Remarks:

c: **Kelvin Patel**
Kpatel@cannondesign.com

☒ **Furnish as Submitted**

☐ Furnish as Noted

☐ Rejected

☐ Revise & Resubmit

☐ Reviewed

☐

Corrections or comments made on shop drawings during this review do not relieve contractor from compliance with requirements of drawings and specifications. This check is only for review of general conformance with the design concept of project and general compliance with information given in contract documents. Contractor is responsible for: confirming and correlating all quantities and dimensions; selecting fabrication processes and techniques of construction; coordinating his work with that of all other trades; and performing his work in a safe and satisfactory manner.

WTASHOP - FW: Tasks - Please approve 235000-008 Propeller unit heaters product data

From: STL-CAC <STL-CAC@CANNONDESIGN.COM>
To: "pgarner@wmtao.com" <pgarner@wmtao.com>, "wtashop@wmtao.com" <wtashop@wm...>
Date: 7/19/2016 2:01 PM
Subject: FW: Tasks - Please approve 235000-008 Propeller unit heaters product data
Cc: "Patel, Kelvin" <kpatel@CANNONDESIGN.COM>, "Grossman, Lynn" <lgrossman@C...>
Attachments: 235000-007 Cabinet unit heaters product data.pdf; 235000-008 Propeller unit heaters product data.pdf; 235000-005 Split system fan coils.pdf; 235000-006 Air handler 5 product data.pdf

Attached please find submittals for your review.

Thank you.

Lori Hill

CANNONDESIGN

225 North Michigan Ave, Suite 1100
Chicago, Illinois 60601

SUBMITTAL IDENTIFICATION SHEET

To be completed by Contractor/CM

PROJECT NAME	
ADDRESS	
NUMBER	
OWNER	
ARCHITECT / ENGINEER	
SUBMITTED BY	
CONTRACTOR / CM SUBMITTAL NO.	CANNON DESIGN SUBMITTAL NO.
DRAWING / DETAIL REFERENCE	SPECIFICATION SECTION / PARAGRAPH
MANUFACTURER / SUPPLIER	ITEM / PRODUCT ID
REQUIRED DATE	PRIORITY
CRITICALITY	

To be completed by Reviewer

CANNON DESIGN SUBMITTAL NUMBER
RECEIVED DATE

- ☐ **A. No Exceptions Taken**
No further review of submittal is required.
- ☐ **B. Make Corrections Noted**
Incorporate corrections in work;
resubmission is not required.
- ☐ **C. Revise and Resubmit**
Revise as noted, and resubmit for review.
- ☐ **D. Rejected**
Submittal is not in compliance with Contract Documents;
provide new submittal.
- ☐ **E. For Record / Information Only**
Submittal was reviewed for Record / Information
purposes only.
- ☐ **F. Not Required for Review**
Submittal is not required by Contract Documents
and has not been reviewed.

Review is for conformance with the design concept of this project and for general compliance with contract documents. Contractor is responsible for quantities, dimensions and compliance with contract documents and for information that pertains to fabrication processes, construction techniques and coordination of this work with all trades which will be affected thereby. This review is null and void if submittal deviates from contract documents and does not indicate or note deviations.

ITEM BEING SUBMITTED (check only one)

- ☐ Shop Drawings ☐ Certification / Qualifications ☐ Coordination Drawing
☐ Samples ☐ Record Documents ☐ Calculations
 (_____ copies) ☐ Product Data ☐ Schedules
☐ LEED Submittal ☐ O&M Manuals
☐ Other _____

ITEM BEING SUBMITTED FOR (check only one)

- ☐ Action ☐ Information Only ☐ Record

REMARKS OR DEVIATIONS

CONTRACTOR / CM CERTIFICATION
(SUBMITTALS NOT CERTIFIED WILL BE RETURNED WITHOUT REVIEW)



PARIC CORPORATION
SUBMITTAL STAMP

THIS SHOP DRAWING HAS BEEN REVIEWED BY PARIC CORPORATION

Subcontractor remains responsible for dimensions, quantities, coordination with other trades and compliance with contract documents.

Ry:

Devin D. Gates

REVIEWED BY	DATE

A/E COMMENTS

- ☐
- See attached sheet(s) for additional comments

REVIEWED BY	DATE



77 Westport Plaza
Suite 250
St. Louis, MO 63146

TRANSMITTAL

No. 15051-0146

Paric Corporation

PROJECT: 15051-Webster University Interdisciplinary Science Building

DATE: 07/18/2016

TO: Cannon Design
1100 Clark Ave
St Louis MO 63102

RE: Air handler 5 product data

ATTN: Kelvin Patel

JOB: 15051

WE ARE SENDING:	SUBMITTED FOR:	ACTION TAKEN:
☐ Shop Drawings	☒ Approval	☒ Approved as Submitted
☐ Letter	☐ Your Use	☐ Approved as Noted
☐ Prints	☐ As Requested	☐ Returned After Loan
☐ Change Order	☐ Review and Comment	☐ Resubmit
☐ Plans		☐ Submit
☐ Samples	SENT VIA:	☐ Returned
☐ Specifications	☐ Attached	☐ Returned for Corrections
☒ Other:	☐ Separate Cover Via:	☐ Due Date:

<i>Item</i>	<i>Package</i>	<i>Code</i>	<i>Rev.</i>	<i>Copies</i>	<i>Date</i>	<i>Description</i>	<i>Status</i>
Submittal		235000-006	1		07/18/2016	Air handler 5 product data	Submitted

NOTES:

CC:

Signed: _____
Devin Gates



Mechanical

LETTER OF TRANSMITTAL

TO: Paric Corporation

77 West Port Plaza #250

St. Louis, MO 63146

ATTN: Jason Szachnieski, Devin Gates

DATE: 7/15/16

JOB #: 5768

RE: Webster ISB

We are sending you

☒

Shop drawings

☐ Attached

☐ Prints

☐ Under separate cover

☐ Plans

☐ Samples

☐ Specifications

☐ Copy of letter

☐ Change order

☐ Other

COPIES	DATE	NO.	DESCRIPTION
1	7/15/16	235000-2.1	Air Handler 5

These are transmitted as checked below:

☐ For signature

☐ For your use

☐ As requested

☐ For bids due

☒

For review and comment

☐ Approved as submitted

☐ Approved as noted

☐ Returned for corrections

☐ Prints returned after loan to us

☐ Other

☐ Resubmit

☒ Submit

☐ Return

☐ copies for approval

☐ copies for distribution

☐ corrected prints

Remarks:

COPY TO: file

SIGNED:

Alex Chambers



Mechanical

Webster University ISB Webster Groves, MO

Submittal #:

235000-2.1

Submittal Description:

Air Handler 5

Return By:

7/29/16

Please Note: To avoid scheduling delays and equipment release delays, please submit by the "Return By" date.

CHECKED BY:			
DESIGNER: ZL		ENGINEER: MD	
☒	NO EXCEPTION TAKEN	☐	MAKE CORRECTIONS NOTED
☐	SUBMIT SPECIFIED ITEM	☐	REVISE AND RESUBMIT
☐	REJECTED	☐	
Checking is only for general conformance with the design concept of the project and general compliance with the information given in the contract documents. Any action shown is subject to the requirements of the plans and specifications. Equipment supplier is responsible for: dimensions which shall be confirmed and correlated at the job site; fabrication processes and techniques of construction; coordination of his work with that of all other trades; and satisfactory performance of his work.			
		Job #:	5768
		Date:	7/15/16
		By:	ARC