

SUBMITTAL SCHEDULE & DATA**Steam/Hot Water Unit Heaters**

Job Name: Webster University ISB
Location: Webster Groves, MO
Submitted by: Thermal Mechanics, Inc.

Date: 07/05/2016
Engineer: WM Tao & Associates
Architect: Cannon Design
Contractor: Icon Mechanical

	Unit Tag		
	UH-001, UH-002	UH-101	UH-102
Model Number	WTC 24SB01FA	WTC 86SB01FA	WTC 86SB01FA
Quantity of Units	2	1	1
Btu/Hr Output	8,803	30,712	29,544
CFM	370	1340	1340
Outlet Velocity (fpm)	675	820	820
Entering Air Temp. (°F)	60	60	60
Final Air Temp. (°F)	82	81	80
Fluid Type (Steam or Hot Water)	Hot Water	Hot Water	Hot Water
Steam Pressure (PSI)	N/A	N/A	N/A
Condensate (lb/hr)	N/A	N/A	N/A
Entering Water Temp. (°F)	140	140	140
Glycol % and Type	0%	0%	0%
Water Flow Rate (GPM)	1.3	3.6	3.1
Water Pressure Drop (Ft of Water)	0.5	0.4	0.3
Water Temp Drop (°F)	14.1	17.6	19.9
Supply Voltage	115/60/1	115/60/1	115/60/1
Motor Type	Totally Enclosed with Thermal Overload	Totally Enclosed with Thermal Overload	Totally Enclosed with Thermal Overload
Motor HP	1/25	1/8	1/8
Motor RPM	1550	1440	1440
Unit Amps	1.6	2.2	2.2
Options & Accessories (See Attached Pages)			

Remarks _____



AccuSpec V4.5a

SUBMITTAL SCHEDULE & DATA

Steam/Hot Water Unit Heaters

Job Name: Webster University ISB
Location: Webster Groves, MO
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Engineer: WM Tao & Associates
Architect: Cannon Design
Contractor: Icon Mechanical

		Unit Tag	
	UH-103		
Model Number	WTC 63SB01FA		
Quantity of Units	1		
Btu/Hr Output	22,025		
CFM	1120		
Outlet Velocity (fpm)	680		
Entering Air Temp. (°F)	60		
Final Air Temp. (°F)	78		
Fluid Type (Steam or Hot Water)	Hot Water		
Steam Pressure (PSI)	N/A		
Condensate (lb/hr)	N/A		
Entering Water Temp. (°F)	140		
Glycol % and Type	0%		
Water Flow Rate (GPM)	2.1		
Water Pressure Drop (Ft of Water)	0.1		
Water Temp Drop (°F)	21.9		
Supply Voltage	115/60/1		
Motor Type	Totally Enclosed with Thermal Overload		
Motor HP	1/12		
Motor RPM	1600		
Unit Amps	1.7		
Options & Accessories (See Attached Pages)			

Remarks _____

SUBMITTAL SCHEDULE & DATA**Steam/Hot Water Unit Heaters**

Model	Description	Qty	Tag
WTC 24SB01FA	Steam/Hot Water Unit Heater	2	UH-001, UH-002
	WTC 24SB01FA	2	UH-001, UH-002
90348	Johnson Controls Thermostat with Sub-Base - Range: 40-90°F	2	UH-001, UH-002
14348	Vertical Deflector Blades	2	UH-001, UH-002
79233	Manual Starter - 1 Pole	2	UH-001, UH-002
28403	Solid State Speed Control	2	UH-001, UH-002
76915	Manual Starter TOL Heater Chip, 1.75A	2	UH-001, UH-002
WTC 86SB01FA	Steam/Hot Water Unit Heater	1	UH-101
	WTC 86SB01FA	1	UH-101
90348	Johnson Controls Thermostat with Sub-Base - Range: 40-90°F	1	UH-101
14380	Vertical Deflector Blades	1	UH-101
79233	Manual Starter - 1 Pole	1	UH-101
28403	Solid State Speed Control	1	UH-101
76918	Manual Starter TOL Heater Chip, 2.40A	1	UH-101
WTC 86SB01FA	Steam/Hot Water Unit Heater	1	UH-102
	WTC 86SB01FA	1	UH-102
90348	Johnson Controls Thermostat with Sub-Base - Range: 40-90°F	1	UH-102
14380	Vertical Deflector Blades	1	UH-102
79233	Manual Starter - 1 Pole	1	UH-102
28403	Solid State Speed Control	1	UH-102
76918	Manual Starter TOL Heater Chip, 2.40A	1	UH-102
WTC 63SB01FA	Steam/Hot Water Unit Heater	1	UH-103
	WTC 63SB01FA	1	UH-103
90348	Johnson Controls Thermostat with Sub-Base - Range: 40-90°F	1	UH-103
14380	Vertical Deflector Blades	1	UH-103
79233	Manual Starter - 1 Pole	1	UH-103
28403	Solid State Speed Control	1	UH-103
76921	Manual Starter TOL Heater Chip, 3.09A	1	UH-103



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STEAM/HOT WATER MODEL NOMENCLATURE

1,2,3	4,5,6	7	8	9,10	11	12
WTC	24	S	B	01	F	A

1,2,3 - Model Type

WTC - Horizontal Airflow Steam/Hot Water Unit Heater

4,5,6 - Input Rating @ 2 lbs. Steam

24 - 24,000 BTUH

7 - Coil Type

S - Standard

8 - Development Sequence

B - Current

9,10 - Motor and Drive Code (Power Code)

01 - 115/60/1 - Totally Enclosed with Thermal Overload

11 - Fan Guard Style

F - Finger Proof Fan Guard

12 - Factory Installed Option

A - None

GENERAL PERFORMANCE DATA**General Performance Data****200°F Entering Water, 60°F Entering Air Temperature, 20°F Water Temp. Drop****Model WTC 24**

Btu/Hr. Output	16,250
Airflow (CFM)	370
Outlet Velocity	675
Entering Air Temp. (°F)	60
Final Air Temp. (°F)	100
Water Flow Rate (GPM)	1.7
Mounting Height (Max Ft.) ¹	10
Heat Throw (Max. Mtg. Ft.) ¹	18
Total Unit Amps	1.6

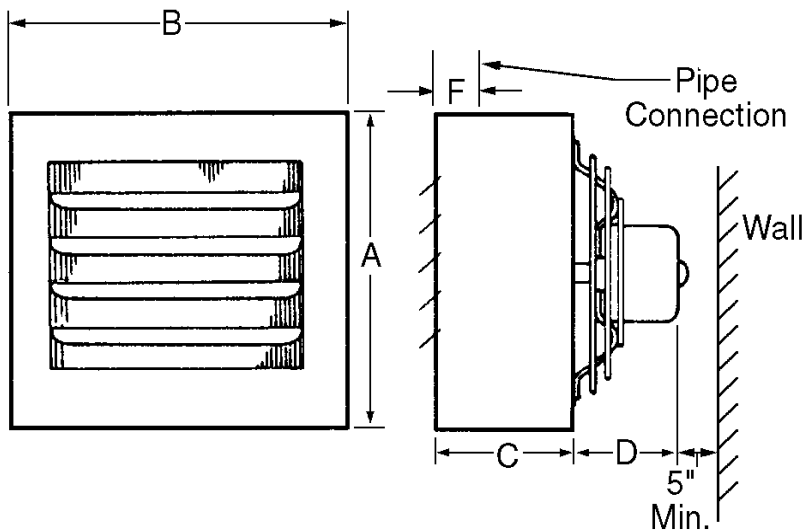
As Configured Conditions

Entering Water Temp. (°F)	140
Entering Air Temp. (°F)	60
Water Temp Drop (°F)	14.1
Btu/Hr. Output	8,803
Final Air Temp. (°F)	82
Mounting Height (Max Ft.) ¹	13
Heat Throw (Max Ft.) ¹	25
Water Flow Rate (GPM)	1.3
Water Pressure Drop (Ft of Water)	0.5

Motor Data

Horse Power	1/25
RPM	1550
Type	Totally Enclosed with Thermal Overload
Motor Amps	1.6

¹ Mounting height measured from floor to bottom of unit. Horizontal units with horizontal louvers open 30° from vertical plane. The maximum mounting height (Max Ft.) is the height above which the unit will not deliver heated air to the floor.

DIMENSIONS – UNIT**Model WTC Dimensions****Model Size WTC 24**
Dimensions (in inches)

A	12-3/8
B	13
C	6
D ¹	6-1/2
F	3
Connections NPT	3/4
Fan Diameter	9
Approx. Ship Wt	20 lbs.

¹ Dimension is for 115V motor.

Specifications

Core Type (Serpentine)	Single
Copper Tube Size (inches)	5/8
Copper Tube Wall Thickness (inches)	0.028
Maximum Coil Rating	150 PSI / 375°F

Junction Box: All units include an electrical junction box either integral to the motor or attached to the unit casing.



AccuSpec V4.5a

STEAM/HOT WATER MODEL NOMENCLATURE

1,2,3	4,5,6	7	8	9,10	11	12
WTC	86	S	B	01	F	A

1,2,3 - Model Type

WTC - Horizontal Airflow Steam/Hot Water Unit Heater

4,5,6 - Input Rating @ 2 lbs. Steam

86 - 86,000 BTUH

7 - Coil Type

S - Standard

8 - Development Sequence

B - Current

9,10 - Motor and Drive Code (Power Code)

01 - 115/60/1 - Totally Enclosed with Thermal Overload

11 - Fan Guard Style

F - Finger Proof Fan Guard

12 - Factory Installed Option

A - None

GENERAL PERFORMANCE DATA**General Performance Data****200°F Entering Water, 60°F Entering Air Temperature, 20°F Water Temp. Drop****Model WTC 86**

Btu/Hr. Output	60,215
Airflow (CFM)	1340
Outlet Velocity	820
Entering Air Temp. (°F)	60
Final Air Temp. (°F)	101
Water Flow Rate (GPM)	6.3
Mounting Height (Max Ft.) ¹	16
Heat Throw (Max. Mtg. Ft.) ¹	31
Total Unit Amps	2.2

As Configured Conditions

Entering Water Temp. (°F)	140
Entering Air Temp. (°F)	60
Water Temp Drop (°F)	17.6
Btu/Hr. Output	30,712
Final Air Temp. (°F)	81
Mounting Height (Max Ft.) ¹	21
Heat Throw (Max Ft.) ¹	43
Water Flow Rate (GPM)	3.6
Water Pressure Drop (Ft of Water)	0.4

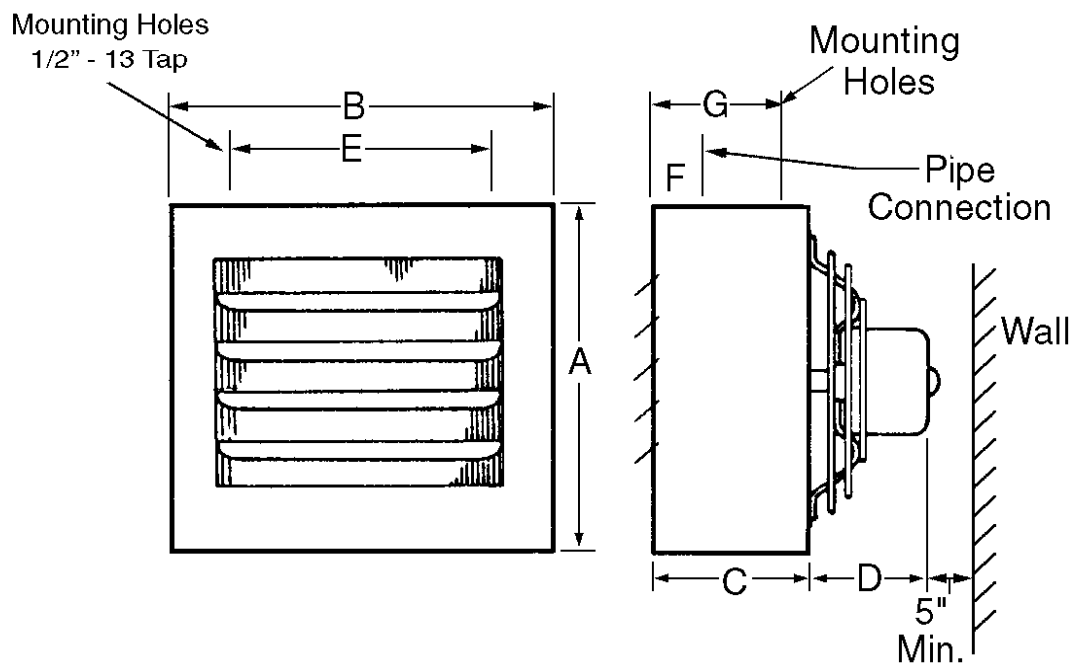
Motor Data

Horse Power	1/8
RPM	1440
Type	Totally Enclosed with Thermal Overload
Motor Amps	2.2

¹ Mounting height measured from floor to bottom of unit. Horizontal units with horizontal louvers open 30° from vertical plane. The maximum mounting height (Max Ft.) is the height above which the unit will not deliver heated air to the floor.

DIMENSIONS – UNIT

Model WTC Dimensions



Model Size WTC 86 Dimensions (in inches)

A	20-7/16
B	21-1/2
C	8-3/4
D ¹	9
E	15
F	3-5/8
G	6
Connections NPT	1-1/4
Fan Diameter	14
Approx. Ship Wt	52 lbs.

¹ Dimension is for 115V motor.

Specifications

Core Type (Serpentine)	Single
Copper Tube Size (inches)	1
Copper Tube Wall Thickness (inches)	0.03
Maximum Coil Rating	150 PSI / 375°F
Junction Box: All units include an electrical junction box either integral to the motor or attached to the unit casing.	



AccuSpec V4.5a

STEAM/HOT WATER MODEL NOMENCLATURE

1,2,3	4,5,6	7	8	9,10	11	12
WTC	86	S	B	01	F	A

1,2,3 - Model Type

WTC - Horizontal Airflow Steam/Hot Water Unit Heater

4,5,6 - Input Rating @ 2 lbs. Steam

86 - 86,000 BTUH

7 - Coil Type

S - Standard

8 - Development Sequence

B - Current

9,10 - Motor and Drive Code (Power Code)

01 - 115/60/1 - Totally Enclosed with Thermal Overload

11 - Fan Guard Style

F - Finger Proof Fan Guard

12 - Factory Installed Option

A - None

GENERAL PERFORMANCE DATA**General Performance Data****200°F Entering Water, 60°F Entering Air Temperature, 20°F Water Temp. Drop****Model WTC 86**

Btu/Hr. Output	60,215
Airflow (CFM)	1340
Outlet Velocity	820
Entering Air Temp. (°F)	60
Final Air Temp. (°F)	101
Water Flow Rate (GPM)	6.3
Mounting Height (Max Ft.) ¹	16
Heat Throw (Max. Mtg. Ft.) ¹	31
Total Unit Amps	2.2

As Configured Conditions

Entering Water Temp. (°F)	140
Entering Air Temp. (°F)	60
Water Temp Drop (°F)	19.9
Btu/Hr. Output	29,544
Final Air Temp. (°F)	80
Mounting Height (Max Ft.) ¹	21
Heat Throw (Max Ft.) ¹	43
Water Flow Rate (GPM)	3.1
Water Pressure Drop (Ft of Water)	0.3

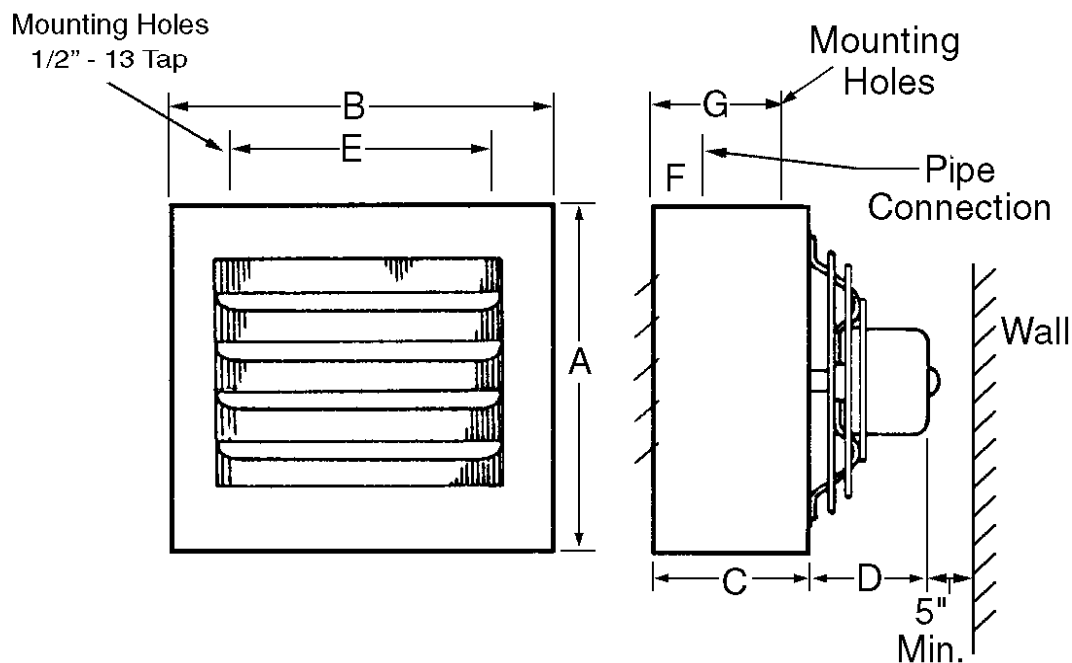
Motor Data

Horse Power	1/8
RPM	1440
Type	Totally Enclosed with Thermal Overload
Motor Amps	2.2

¹ Mounting height measured from floor to bottom of unit. Horizontal units with horizontal louvers open 30° from vertical plane. The maximum mounting height (Max Ft.) is the height above which the unit will not deliver heated air to the floor.

DIMENSIONS – UNIT

Model WTC Dimensions



Model Size WTC 86 Dimensions (in inches)

A	20-7/16
B	21-1/2
C	8-3/4
D ¹	9
E	15
F	3-5/8
G	6
Connections NPT	1-1/4
Fan Diameter	14
Approx. Ship Wt	52 lbs.

¹ Dimension is for 115V motor.

Specifications

Core Type (Serpentine)	Single
Copper Tube Size (inches)	1
Copper Tube Wall Thickness (inches)	0.03
Maximum Coil Rating	150 PSI / 375°F
Junction Box: All units include an electrical junction box either integral to the motor or attached to the unit casing.	



AccuSpec V4.5a

STEAM/HOT WATER MODEL NOMENCLATURE

1,2,3	4,5,6	7	8	9,10	11	12
WTC	63	S	B	01	F	A

1,2,3 - Model Type

WTC - Horizontal Airflow Steam/Hot Water Unit Heater

4,5,6 - Input Rating @ 2 lbs. Steam

63 - 63,000 BTUH

7 - Coil Type

S - Standard

8 - Development Sequence

B - Current

9,10 - Motor and Drive Code (Power Code)

01 - 115/60/1 - Totally Enclosed with Thermal Overload

11 - Fan Guard Style

F - Finger Proof Fan Guard

12 - Factory Installed Option

A - None

GENERAL PERFORMANCE DATA**General Performance Data****200°F Entering Water, 60°F Entering Air Temperature, 20°F Water Temp. Drop****Model WTC 63**

Btu/Hr. Output	45,581
Airflow (CFM)	1120
Outlet Velocity	680
Entering Air Temp. (°F)	60
Final Air Temp. (°F)	97
Water Flow Rate (GPM)	4.7
Mounting Height (Max Ft.) ¹	15
Heat Throw (Max. Mtg. Ft.) ¹	29
Total Unit Amps	1.7

As Configured Conditions

Entering Water Temp. (°F)	140
Entering Air Temp. (°F)	60
Water Temp Drop (°F)	21.9
Btu/Hr. Output	22,025
Final Air Temp. (°F)	78
Mounting Height (Max Ft.) ¹	20
Heat Throw (Max Ft.) ¹	41
Water Flow Rate (GPM)	2.1
Water Pressure Drop (Ft of Water)	0.1

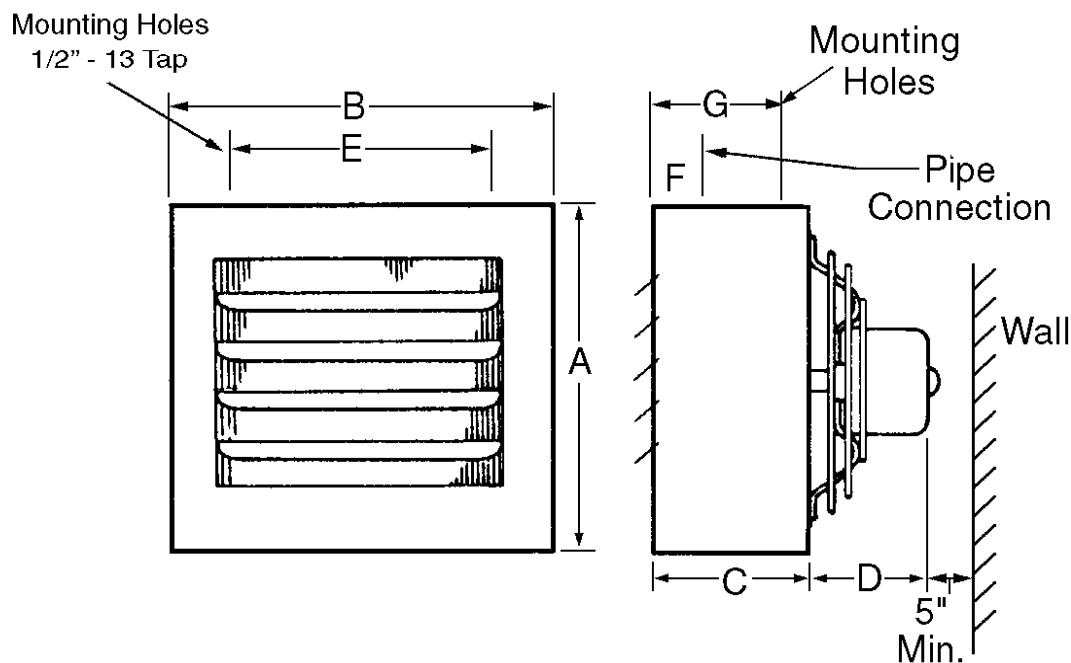
Motor Data

Horse Power	1/12
RPM	1600
Type	Totally Enclosed with Thermal Overload
Motor Amps	1.7

¹ Mounting height measured from floor to bottom of unit. Horizontal units with horizontal louvers open 30° from vertical plane. The maximum mounting height (Max Ft.) is the height above which the unit will not deliver heated air to the floor.

DIMENSIONS – UNIT

Model WTC Dimensions



Model Size WTC 63 Dimensions (in inches)

A	20-7/16
B	21-1/2
C	8-3/4
D ¹	8
E	15
F	3-5/8
G	6
Connections NPT	1-1/4
Fan Diameter	14
Approx. Ship Wt	48 lbs.

¹ Dimension is for 115V motor.

Specifications

Core Type (Serpentine)	Single
Copper Tube Size (inches)	1
Copper Tube Wall Thickness (inches)	0.03
Maximum Coil Rating	150 PSI / 375°F
Junction Box: All units include an electrical junction box either integral to the motor or attached to the unit casing.	

Specifications

General

Contractor shall furnish and install steam/hot water unit heater(s). Performance shall be as indicated on the equipment schedule in the plans. Unit heater(s) shall listed by CSA as certified.

Units

Self-contained, factory assembled, pre-wired unit consisting of cabinet with air deflection louvers, supply fan, motor, and condenser.

Coating

Electrostatically applied baked on grey-green corrosion resistant, polyester powder coat paint that meets the following tests:

1. 500 hours of salt spray as defined in ASTM B117.
2. Adhesion/crosshatch tape tests as defined in ASTM D3359, Method B, Rating 5B.
3. Will not crack or peel when test panel is bent around a 1/8 inch arbor.

Condenser

Condenser coils are of the extended surface type of serpentine design, utilizing aluminum fins and DLP-type copper tubes with malleable iron supply and return connections. Tubes are mechanically bonded to the collars of the fins. The condensers are warranted for operation at steam or hot water pressures up to 150 pounds per square inch gauge and/or temperatures up to 375°F. All coils are leak tested at 165 to 200 psig, air under water. Fins are continuous across the width and depth of the condenser and are vertically oriented to minimize the collection of dirt and dust.

Coils are of serpentine design with horizontal tubes, vertical fins and center supply and return connections at top and bottom of unit. All tube bends are brazed. All tubes have individual expansion bends. Copper tubes are 1" O.D. with 0.03" wall thickness.

Motor

Single motor with a supply voltage of 115/60/1 and horsepower of 1/12 as indicated on the equipment schedule and manufactured in accordance with NEMA standards for continuous fan duty type applications. Must be totally enclosed and single phase motors will have built in thermal overload protection. Will be mounted to the unit with rubber vibration absorbing material. The entire length of the line voltage motor leads will be shielded and terminate in a factory supplied junction box mounted on the unit or integral to the motor.

Fan/Fan Guards

Fans AMCA rated direct drive, aluminum blade, steel hub propeller will be statically and dynamically balanced. Unit shall be equipped with a safety fan guard.

Fingerproof Fan Guard.

Air Deflectors

The unit shall be furnished with horizontal air deflectors. The deflectors are adjustable to almost any desired position for downward, straight or upward airflow.

Accessories

The following items are to be field installed in accordance with the manufacturer's instructions:

Room Thermostat: Single-stage, 10 amp @ 115V; 6 amp @ 230V. 40-90°F range with auto-off-fan positions; Penn model T22BBC-1.

Manual Starter with TOL: 115V or 230V, single phase, toggle type, 1 pole.

Vertical deflector blades which are individually adjustable to provide four way directional discharge air control coated to match casing finish.



THERMAL MECHANICS, INC.

715 GODDARD AVENUE, CHESTERFIELD, MO 63005

VOICE (636) 532-1110

FAX (636) 532-7318

DATE: July 5, 2016

MAB

EQUIPMENT SUBMITTAL – REVISION “2”

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: **Airedale**

Equipment: ***Propeller Unit Heaters***

Spec Section: 235000.2.13

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

Engineer: William Tao & Associates

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

TMI Ref #: 160501

Contact: Jason Hibbits



THERMAL MECHANICS, INC.

715 GODDARD AVENUE, CHESTERFIELD, MO 63005

VOICE (636) 532-1110

FAX (636) 532-7318

DATE: July 5, 2016

MAB

SUBMITTAL COMMENTS RESPONSE

July 1, 2016 Comments	July 5, 2016 Response
1. Include factory disconnect as scheduled	The manual starter with toggle switch will serve as disconnect.
2. No mention of summer fan switch or mounting bracket. Need to include both.	a. The room thermostat was changed to include a subbase with a Fan-Off-Auto system switch. The 'Fan' position can be used to operate just the fan during summer operation. b. There are two ½" threaded mounting holes in the top of unit heaters. No mounting/hanging brackets are provided.
3. "Room Thermostat" mentioned. Can this be remote mount?	A "Room" thermostat is generally remotely mounted in the controlled space or "Room".

Shop Drawing Submittal Review

Transmitted To: Cannon Design

Date: July 29, 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	235000M08	(Submittal No. 235000-008)
		• Airedale Propeller Unit Heaters

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



77 Westport Plaza
Suite 250
St. Louis, MO 63146

TRANSMITTAL

No. 15051-0148

Paric Corporation

PROJECT: 15051-Webster University Interdisciplinary Science Building

DATE: 07/18/2016

TO: Cannon Design
1100 Clark Ave
St Louis MO 63102

RE: Propeller unit heaters 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:

Item	Package	Code	Rev.	Copies	Date	Description	Status
Submittal		235000-008	1		07/18/2016	Propeller unit heaters 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	235000-2.13	Propeller Unit Heaters

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 #:

235000-2.13

Submittal Description:

Propeller Unit Heaters

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: JS		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