



**VIRGINIA POLYTECHNIC INSTITUTE AND STATE UNIVERSITY
PROCUREMENT DEPARTMENT**

ADDENDUM NO. 2

DATE: March 27, 2024
TO: All Offerors
FROM: Bryan Holloway, Senior Buyer
TOTAL PAGE(S): 1 pages (not including attachments)
SOLICITATION TITLE: Military Building Tailor Shop Renovation
SOLICITATION NUMBER: IFB # 218672410

I. CLARIFICATIONS AND ADDITIONAL INFORMATION

1. The deadline for Pre-Bid RFI's has been extended until 12:00PM April 5, 2024.
2. The Pre-Bid Meeting Agenda from the second non-mandatory site walk conducted on 3/25/ 2024 is attached hereto.
3. AECOM's Construction Submittal Review Comments have also been attached hereto.

All other aspects of this solicitation remain the same.

PRE-BID MEETING



Project Name:	MILITARY BUILDING PRE-BID	Work Order #:	24-659949
VTR Project Manager:	BRYAN FELTS	Meeting Date:	3/25/24
Architect:	AECOM	Meeting Time:	1:30PM
VT Building #:	203	Meeting Location:	MILITARY BLD ENTRANCE

1. PROJECT OVERVIEW

1. **Scope of Work.** The project's scope can generally be summarized as a complete gut and renovation of the 2nd floor of the Military Building to include the following items:
 - a. Lead & Asbestos Abatement
 - b. Phasing per drawings (Tailor shop to remain open and functioning throughout construction, this will require partial finals on phase 1 and time allowance for program to relocate)
 - c. Installation (including crane set, roof/curb prep and connections) of VT provided AHU (AHU ETA is early December)
 - d. Site work and elevator (bid additive)
2. **Key Dates.**
 - a. Pre-bid RFI due date: 4/5/24
 - b. Bid due date: 4/22/24 @ 2pm
 1. ****BIDS MUST INCLUDE THE FOLLOWING**
 - a. LIST OF EXPECTED SUBCONTRACTORS
 - b. BREAKDOWN (SOV) BY DIVISION
 - c. DRAFT SCHEDULE W/ OUT BID ADD
 - d. DRAFT SCHEDULE W/ BID ADD
3. **Documents.** The Contractor will receive permitted drawings and UBO issued permits electronically at the Preconstruction meeting. A set of permitted drawings, permits and project revisions/RFIs are to be kept on-site at all times.
 - a. **Additional coordination with window replacement (early 2025) and sprinkler install of 2nd floor (work to be contracted separately but GC is required to handle scheduling and coordination to flow with phasing and inspection requirements).**
4. **Work Hours.** All work is to be performed between the hours of **[NORMAL BUSINESS HOURS – PLEASE DEFINE]**. Off Hours/Weekend work is allowed, but must be coordinated in advance with the VTR Project Manager.
5. **Parking.** Parking passes are the responsibility of the contractors. Parking on the Blacksburg campus is extremely limited. Contractor personnel are to park in designated areas only. Park on paved or gravel areas only, do not park in the grass. Blocking accessible routes/sidewalks/ramps is not acceptable at any time; violators will be towed without warning.
6. **Utilities Shutdowns.** Coordinate with VTR Project Manager for utility shutdowns. Please allow 1 week notice for local shutdown and 1 month notice if a full building shutdown is required. Failure to give proper notification to Virginia Tech can result in delay of your shutdown and will be the responsibility of the contractor to make up any time lost due to the postponement.

7. **Dumpster(s)/Connex(s).** Identify dumpster locations and verify that all necessary coordination has taken place prior to dumpster(s') arrival. If parking spaces are used for placement of dumpster/connex, parking services will charge \$6 per day/per space or \$30 per month/per space, which will be the contractor's responsibility to pay for.
 - a. Laydown/ staging area discussion
 - b. Pull windows for trash shut and material stocking?
8. **Road/Sidewalk Closures.** Contractor to provide at least 2 weeks' notice for single lane closures and 1 month for full road closure.
9. **N&IS.** NI&S provides demo and wiring of data. Coordination between contractor and NI&S for this scope of work.
10. **Key Shop.** The Key Shop operating hours are 7:00 am to 3:30 pm. Please limit the number of keys checked out for each job. The GC should check out the keys for its subcontractors to share. All contractors must provide a name for the person(s) that will be checking out keys. All Keys must be returned at the end of each shift. Key pick up for off hours/weekend work must be coordinated thru the VTR project manager.

2. SAFETY

1. **Personal Protective Equipment (PPE).**
 - a. Job site safety is the contractor's responsibility.
 - b. Proper hand protection, hard-soled shoes, hard hats and safety glasses will be required for all workers on the project. Signage shall be posted at the jobsite notifying all personnel of PPE requirements (per VT EHS standards).
2. **Virginia Tech Environmental Health & Safety (EHS)**
 - a. Any work that can create a spark, welding or an open flame requires a Hot Work Permit program and shared with the VT Project Manager. Hot work program should be kept onsite at all times.
 - b. Safety Data Sheets (SDSs) for any hazardous chemicals will need to be submitted to Robin McCall-Miller and copied to the VTR Project Manager. In addition, the SDS sheets must be available on-site at all times throughout the duration of the project.
 - c. Visit the link below for EHS standards for construction on the Virginia Tech campus
http://www.ehss.vt.edu/programs/contractor_safety.php
 - d. All contractor personnel are to wear an item that identifies the worker as an employee of the Contractor.
 - e. Daily Reports. Each General Contractor is to submit a Daily Report for every project. The Daily Report is to include the name of EVERY individual working that day and where they were working. "Where they are working" includes the floor of the building.
 - f. *Any Other Project Specific Hazards – Roof, confined space, etc.*

3. COVID-19

- a. Adhere to state/local and CDC guidelines at all times.
- b. Positive Test. Notify VT PM immediately.

3. ADMINISTRATION

1. **VTR Project Manager.** Below is the contact information for the VTR Project Manager.

Name	Desk Phone	Mobile Phone	E-mail Address
Bryan Felts	540.231.1650	540.446.6745	bryanf@vt.edu

2. **Submittals**

- a. Submittals are to be as specified in the Project Manual, or as specified in notes on the Drawings.
- b. All submittals are to be sent to the VTR Project Manager, who will review and forward them on to the project's Architect/Engineer; reviewed submittals will be returned by the Architect/Engineer to the VTR Project Manager, who will review and forward them to the Contractor.

3. **Requests for Information (RFIs)**

- a. Any questions/clarifications that arise during construction should be submitted in writing as an official RFI to the VTR Project Manager, who will coordinate with the client and Project Architect/Engineer, as required. E-mails will not suffice, although an RFI form can be e-mailed. Answered RFIs will be transmitted to the Contractor through the VTR Project Manager.
- b. Issues may be verbally discussed with the VTR Project Manager prior to submission, but doing so will not negate the requirement of a written submission.
- c. Answered RFI's are to be kept on-site for reference during UBO inspections.

4. **Change Orders**

- a. No additional work is to be performed without receipt of a fully executed VT (Change Order) Purchase Order.
- b. Any proposed changes should be submitted to the VTR Project Manager.
- c. All change orders must be submitted using a GCI, SCI, SSI Form or DGS-30-092 CO-11 form (for IFB projects only).

5. **Invoices**

- a. Invoices should be submitted electronically to the VTR Project Manager.
- b. Retainage will be released at the end of the project after all as-builts and close-out documents have been submitted and approved.
- c. The VTR PM will review, approve or reject the invoice in 48 hours from receipt. The invoice will be processed and release payment within 30 days.
- d. Include an updated schedule with each submitted invoice.

6. **Conflicts.** The Contractor shall contact the VTR Project Manager should any conflicts arise during the project. The VTR Project Manager will engage the necessary resources to resolve such conflicts.

4. SCHEDULE

Proposed NTP	Construction Start Date	Substantial Completion Date	Final Completion Date
May of 2024	5/25/24	3/5/2025	4/5/2025

- Include necessary narrative to express any schedule concerns or conflicts

5. INSPECTION(S)

1. The Contractor will be responsible for notifying the VTR Project Manager when an inspection needs to be scheduled. Please allow 48-72 hours to schedule inspections. The VTR Project Manager will coordinate with the UBO office to arrange for the required inspections.

6. ROUNDTABLE



Construction Administration
Submittal Review Comments

Project No. 60707113 Task 8003 Submittal No. #01 - R3 Revision: 0

Project: VT Military Building -Renovation Project

Item Submitted: RTU - 1

Spec Section:

Submittal Date: 03/06/24

Review Date: 03/07/24 Reviewer: WAJ, TRC

REVIEW ACTION:


Approved as Noted

Comment #

1

Comments

Electrical drawings show single point connection to RTU-1. Verify fan and associated VFD is powered by the unit and does not need a separate power connection.

	
ACTION:	
<input type="checkbox"/> "A" Approved	<input type="checkbox"/> "E" Receipt Acknowledged
<input checked="" type="checkbox"/> "B" Approved as Noted	<input type="checkbox"/> "F" For Information Only
<input type="checkbox"/> "C" Correct and Resubmit	<input type="checkbox"/> "G" No Action Taken
<input type="checkbox"/> "D" Disapproved	
<small>This review was performed only for general conformance with the design concept of the project and general compliance with the information given in the Contract Documents. Modifications or comments made on the shop drawings during this review do not relieve the Contractor from compliance with the requirements of the assembly of which the item is a component. Contractor is responsible for dimensions to be confirmed and correlated at the jobsite, information that pertains solely to the fabrication processes or to the means, methods, techniques, sequences, and procedures of construction, coordination of the work of all trades and for performing all work in a safe and satisfactory manner.</small>	
SUBMITTAL NUMBER #01 - R3	PROJECT NUMBER 60707113
REVIEWED BY WAJ, TRC	DATE 3/6/2024
<small>The Contractor shall review and comply with notes and comments on submittals in addition to notes provided on attached submittal transmittal / review form.</small>	

Trane Performance Climate Changer Air Handler

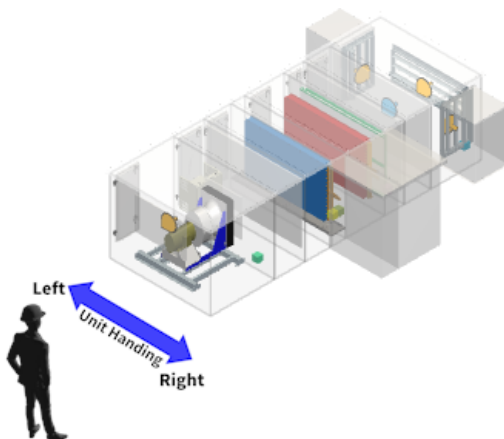
Unit Overview - RTU-1 R3

Application	Unit Size	External Dimensions			Weight	
		Height	Width	Length	Installed	Rigging
Outdoor unit	CSAA017	55.2 in	72.0 in	193.6 in	3664 lb	3267 lb
Quantity of Shipping Sections		Largest Ship Split			Heaviest Ship Split	Elevation
		Height	Width	Length		
4 piece(s)		55.2 in	72.0 in	55.0 in	1028 lb	2150.00 ft
Supply Fan						
Airflow	7670 cfm	Total Static Pressure	4.014 in H2O			

Note: Height includes air handler sloped roof panel and standing seam.

Construction Features

Panel	2in. foam injected R-13 with thermal break
Panel Material	All unit inner panels - galvanized
Integral Base Frame	6in. integral base frame
Paint	Slate gray
Short Circuit Current Rating	5 kA
Agency Approval	UL listed unit
Roof Curb Type	Standard roof curb



Unit Electrical

Circuit	Voltage/Phase/Frequency	FLA	MCA	Max Fuse Size
Circuit number 1 Supply fan motor(s)	200-208/3/60	29.50 A	-	-

Note: MCA and MOCP to be determined by the Electrical Contractor.

Unit Controls

Factory Controls Package	Unwired end devices
Controller Type	No controller

Warranty

Warranty section	Extd. warranty
Labor - 1st year	1st year labor warranty

Pipe cabinet section

Pipe Cabinet	Front Door	Back Door	Side Door	Weight
Pipe Cabinet 1			One side door	200.6 lb

Air mixing section - Position: 1

Openings							
Face	Path	Type	Airflow	Face Velocity	Area	Pressure Drop	Hood
Back	Return	Parallel blade damper	7670 cfm	1097 ft/min	6.99 sq ft	0.228 in H2O	N/A
Right	Outside	High velocity parallel damper	3835 cfm	917 ft/min	4.18 sq ft	0.171 in H2O	Yes
Left	Outside	High velocity parallel damper	3835 cfm	917 ft/min	4.18 sq ft	0.171 in H2O	Yes
Section Options							

**Access/blank/turning section - Position: 2****Options**

Section Length	19.000 in
Door Location 1	Left

Filter section - Position: 3**Primary Filter**

Type	Frame	Loading	Airflow	Face Area	Face Velocity	Condition	Pressure Drop	Filter Quantity	Filter Size
Pleated media - MERV 8	2in. filter frame	Side load filters	7670 cfm	18.89 sq ft	406 ft/min	Mid-life	0.613 in H ₂ O	2.00 4.00	20x20 20x24

Filter Section Options**Door Location**

Left

Heating coil section - Position: 4

Coil Construction		Coil Performance	
Model	Hot water - 1/2" Unit Optimized, Low Water Flow (UA)	Capacity	
Rows	2	Total	170.80 MBh
Tube Diameter	1/2in. tube diameter (12.7 mm)	Air	
Coil Connection	Standard	Flow	7670 cfm
Tube Matl/Wall Thickness	.025" (0.635 mm) copper tubes	Entering Dry Bulb	62.80 F
Fin Spacing	72 Per Foot	Leaving Dry Bulb	85.01 F
Fin Material	Aluminum fins	Pressure Drop	0.113 in H ₂ O
Fin Type	Delta flo E (energy efficient)	Face Velocity	456 ft/min
Face Area	16.81 sq ft	Fluid	
Coil (top/single) H x L	40 in. (1016 mm) X 61" (1549 mm) finned length	Flow	11.38 gpm
Casing	Stainless steel	Entering	180.00 F
Turbulators	Not Included	Leaving	150.00 F
Rigging Weight	79.1 lb	Pressure Drop	0.49 ft fluid
Installed Weight	94.4 lb	Tube Velocity	1.31 ft/s
Coil Section Options		Reynolds Number	12820.82
Extended Drain and Vent	YES	Type	Water
Drain Pan Size	Small	Fouling Factor	0.00025 hr-sq ft-deg F/Btu
Door Location	Left	Volume	1.84 gal
		AHRI 410 Classification	
		AHRI 410 Classification	AHRI ACHC Certified
		Data Generation Date	3/6/2024
		Trane Select Assist update number	2800

Note: 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.



Cooling coil section - Position: 5

Coil Construction		Coil Performance	
Model	Chilled water - 1/2" Unit Optimized, General (UW)	Capacity	
Rows	4	Total	188.64 MBh
Tube Diameter	1/2in. tube diameter (12.7 mm)	Sensible	173.20 MBh
Coil Connection	Standard	Air	
Tube Mat/Wall Thickness	.025" (0.635 mm) copper tubes	Flow	7670 cfm
Fin Spacing	144 Per Foot	Entering Dry Bulb	77.10 F
Fin Material	Aluminum fins	Entering Wet Bulb	62.90 F
Fin Type	Delta flo H (Hi efficient)	Leaving Dry Bulb	54.90 F
Face Area	16.81 sq ft	Leaving Wet Bulb	54.30 F
Coil (top/single) H x L	40 in. (1016 mm) X 61" (1549 mm) finned length	Pressure Drop	0.382 in H ₂ O
Casing	Stainless steel	Face Velocity	456 ft/min
Turbulators	Not Included	Fluid	
Rigging Weight	237.4 lb	Flow	37.60 gpm
Installed Weight	302.6 lb	Entering	45.00 F
Coil Section Options		Leaving	55.00 F
Extended Drain and Vent	YES	Pressure Drop	2.60 ft fluid
Drain Pan	Stainless steel	Tube Velocity	2.24 ft/s
Drain Connection	Left	Reynolds Number	6314.45
Minimum Trap Height (L)	7.208 in	Type	Water
H Trap Dimension	4.139 in	Fouling Factor	0.00000 hr-sq ft-deg F/Btu
J Trap Dimension	2.069 in	Volume	7.80 gal
		AHRI 410 Classification	
		AHRI 410 Classification	AHRI ACHC Certified
		Data Generation Date	3/6/2024
		Trane Select Assist update number	2800

Note: 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.



Access/blank/turning section - Position: 6

Options	
Section Length	19.000 in
Door Location 1	Left

Starter/VFD only section - Position: 7

Supply Fan Motor Interface Door	Left
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Supply fan section - Position: 8

Fan Data		Motor Data	
Wheel Diameter/Type/Class	24.5in. dd plenum, 80% width, H press	Power / Fan	10 hp
Fan Quantity	1	Voltage	200-208/3
Discharge Location	Front top	Speed	1800
Motor Location	Left side drive	Class	NEMA premium compliant ODP
Blades	Higher eff.(some bands lower,more spike)	Efficiency	92.19 %
Drive Service Factor	Direct drive	Part Load Efficiency	87.10 %
Fan K-factor	3285.00	Fan electrical power (FEP)	6.03 kW
Fan Performance		FEI	1.43
Airflow	7670 cfm	Wire to air static efficiency	59.93 %
Total Static Pressure	4.014 in H2O	Note: Field provided VFD efficiency not included. DOL motor fan electrical power calculated in accordance with AHRI 430.	
Total Brake Power	7.440 hp	Note: Certified airflow performance per AHRI 430	
Operating Speed	1737 rpm	Fan Section Options	
AMCA FEG	FEG85	Fan Wheel Balance	Inverter balance with shaft grounding
Bare fan peak total efficiency	76.70 %	Door Location	Left
Unit Static Efficiency	65.24 %	Door Guard	Yes
Motor Interface Options			
Selection Type	Empty electrical enclosure		
Voltage	200-208/3		
Mounting Location	Internal mounting		
Motor Wire In Conduit	Motor wiring conduit		
VFD Frequency	59.00 Hz		

Fan Discharge Options							
Face	Type	Airflow	Face Velocity	Area	Pressure Drop	Exhaust Hood	Damper Torque Requirement
Front Face Feature	Sizeable rectangular opening		1298 ft/min	5.91 sq ft	0.263 in H2O	N/A	N/A

Note: Certified by the AHRI Central Station Air-Handling Unit (AHU) Certification Program, based on AHRI Standard 430/431. AHRI certified units are subject to rigorous and continuous testing, have performance ratings independently measured and are third party verified. Certified units may be found in the AHRI Directory at www.ahridirectory.org.



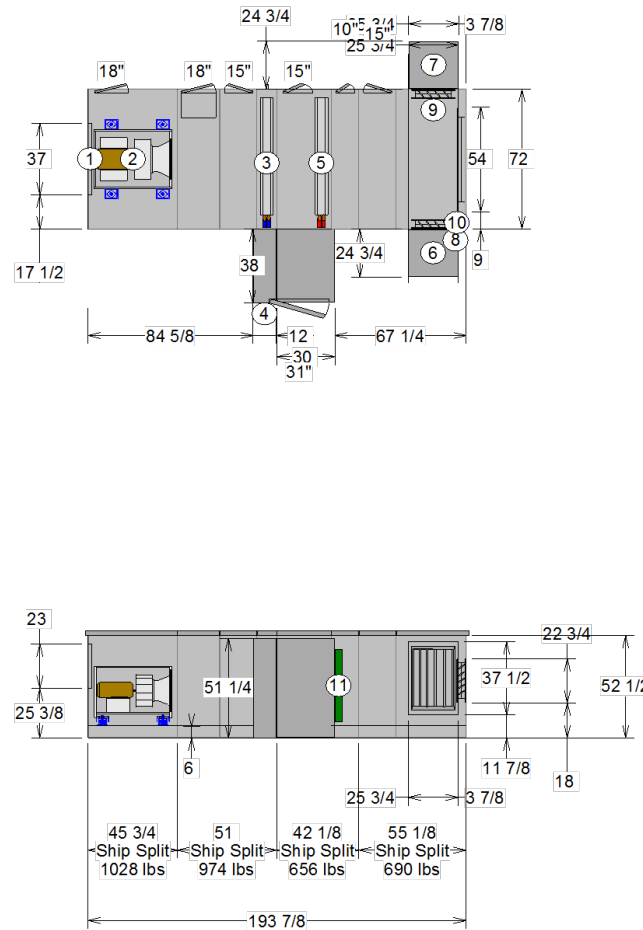
Pressure Drop in (in w.g.)

Supply fan	
Air mixing section	0.64
Filter section	0.61
Coil section	0.11
Coil section	0.38
Fan section	0.26
Internal Static Pressure	2.01
External Static Pressure	2.00
Total Static Pressure	4.01



Job Name: VT Military Building

CSAA
Quantity: 1
Tags: RTU-1 R3



- 1 Opening front
23 x 37
 - 2 Plenum fan - 24.5in. dd
plenum, 80% width, H
press Supply fan 10 hp
200-208/3
 - 3 Cooling coil - 4 Rows
Coil type 1/2" Unit
Optimized, General (UW)
 - 4 Pipe cabinet right (2)
 - 5 Heating coil - 2 Rows
Coil type 1/2" Unit
Optimized, Low Water
Flow (UA)
 - 6 Hood right
 - 7 Hood left
 - 8 Damper right-parallel blade
33.5 x 22.75
 - 9 Damper left-parallel blade
33.5 x 22.75
 - 10 Damper back-parallel
blade
22.75 x 54
 - 11 Flat filters - Pleated media
- MERV 8
- Doors
- 18 width x 42 height
 - 15 width x 42 height
 - 31 width x 41 height
 - 10 width x 42 height

For maneuvering purposes, include 1.125 inches to each ship split length for overlapping panel flange. Flange will not add to overall installed unit length shown.

OPENING AND DIMENSIONS MAY VARY FROM CONTRACT DOCUMENTS / RETURN OF APPROVED DRAWINGS CONSTITUTES ACCEPTANCE OF THESE VARIANCES / NOT TO SCALE

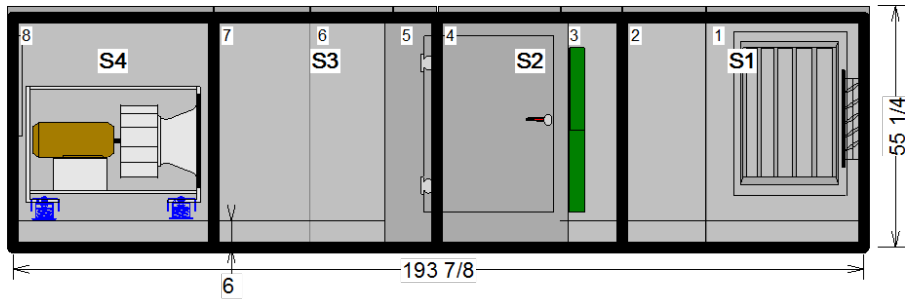
Unit size: 17	Job Name: VT Military Building	Unit Casing: 2in Double Wall Foam
Product group: Outdoor unit	7670 cfm	Proposal Number:
Integral base frame: 6in. integral base frame	Sales Office:	Tags: RTU-1 R3
Paint: Slate gray		3267.3 lb / 3664.0 lb



TRANE

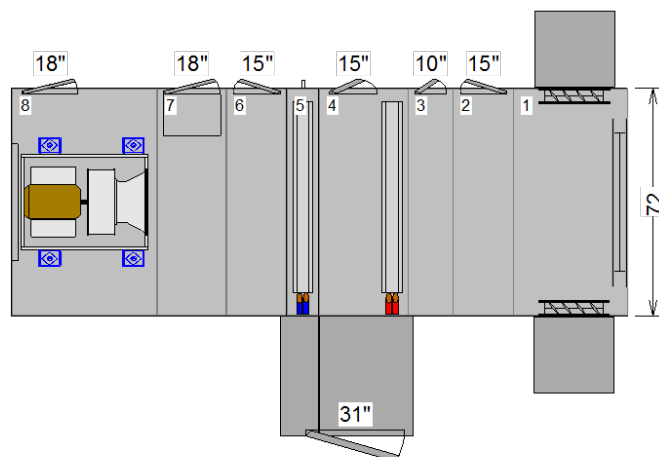
Performance Climate Changer
Air Handlers

Shipping splits are indicated by thick black lines



For maneuvering purposes, include 1.125 inches to each ship split length for overlapping panel flange. Flange will not add to overall installed unit length sh

Pos #	Module	Length	Weight
1	Air mixing section	36	506.98
2	Access section	19 1/8	183.04
3	Filter section	14 1/8	177.91
4	Coil section	28 1/8	477.95
5	Coil section	10 1/8	484.54
6	Access section	19	171.67
7	Controls section	21 7/8	317.76
8	Fan section	45 3/4	1027.94
	Roof Curb		316.24
Installed Unit Weight			3664.02 lbs



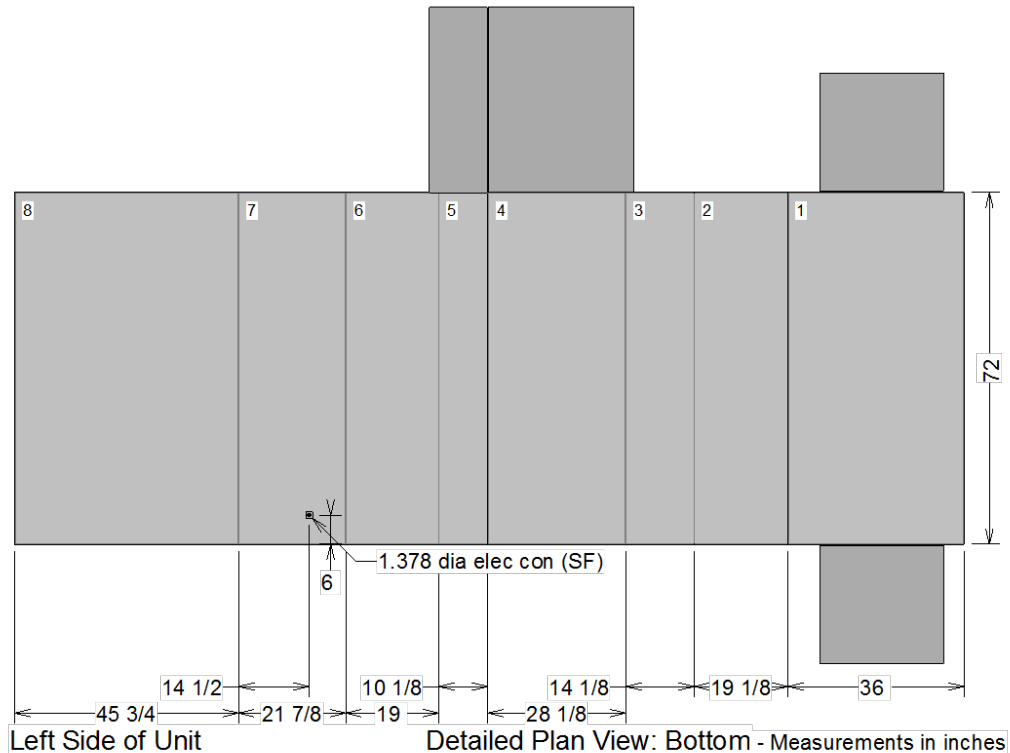
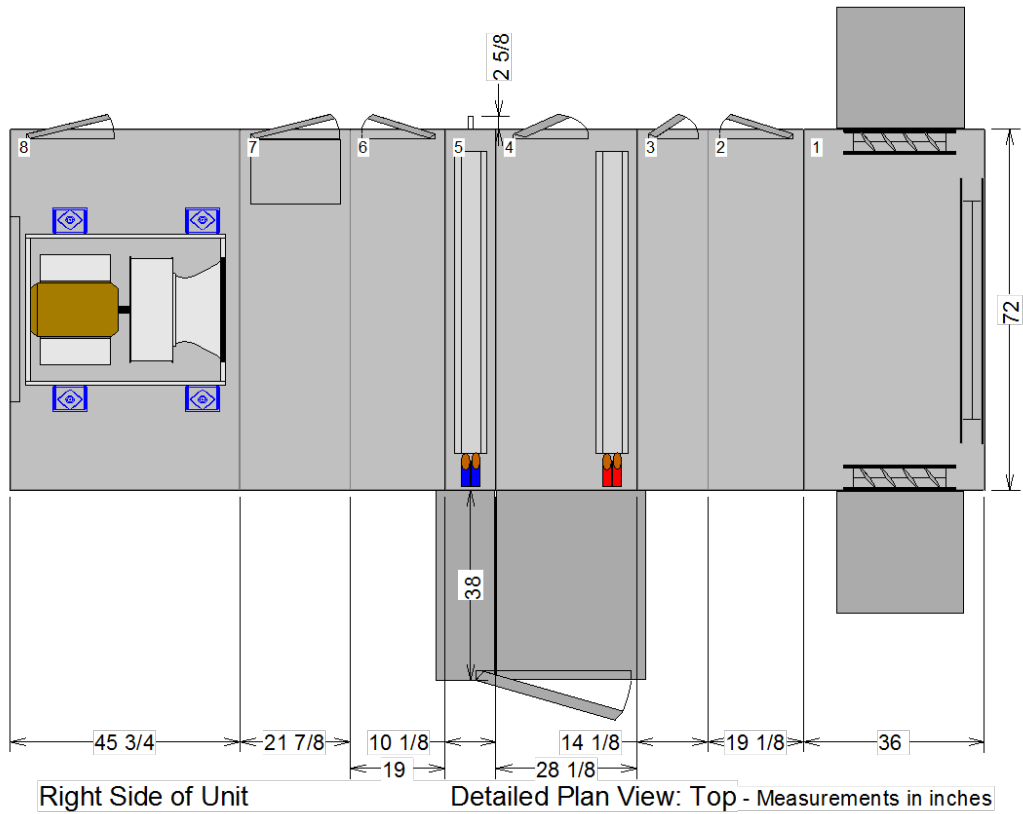
Basic Overall Plan View: Top - Measurements in inches

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TRANE

Performance Climate Changer
Air Handlers



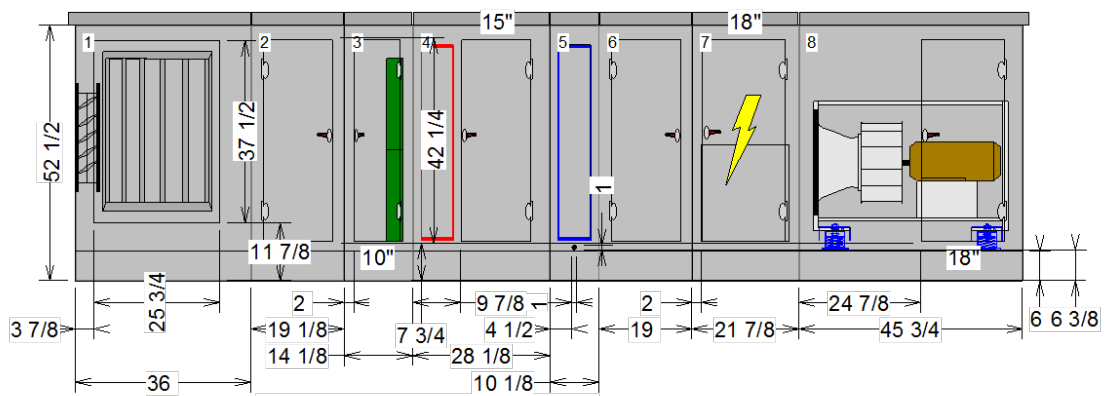
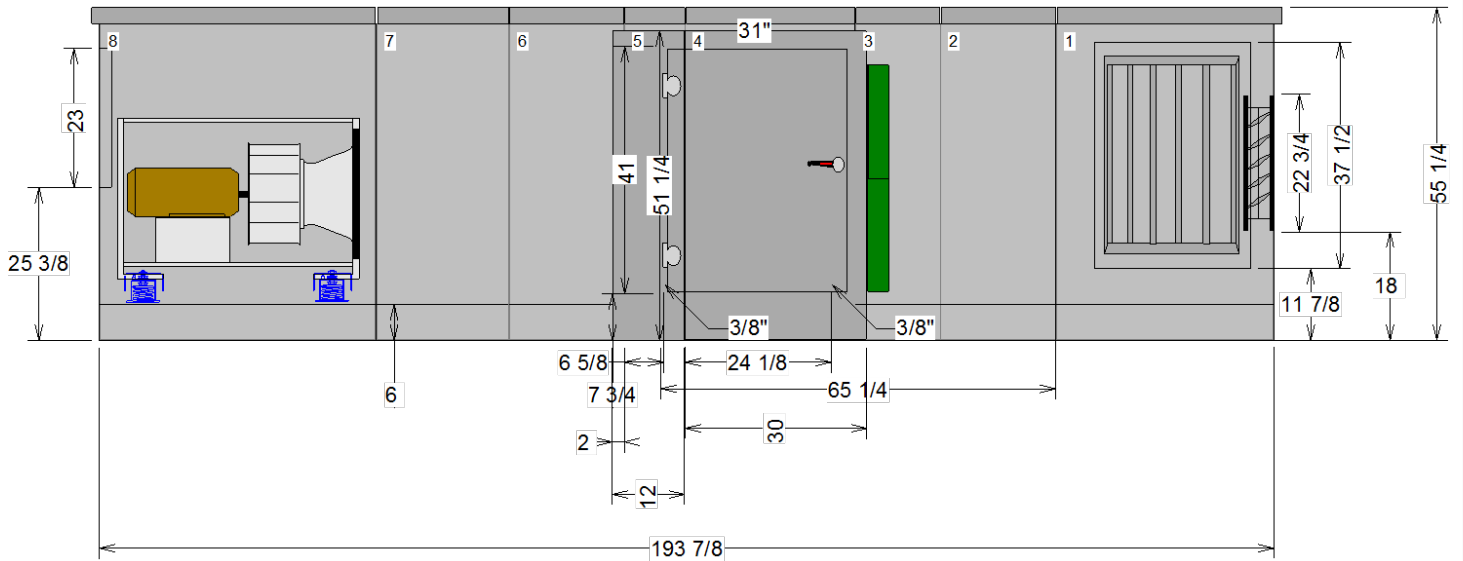
****Placement of electrical conduit may vary by a tolerance of 8" in any direction.**

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TRANE

Performance Climate Changer
Air Handlers



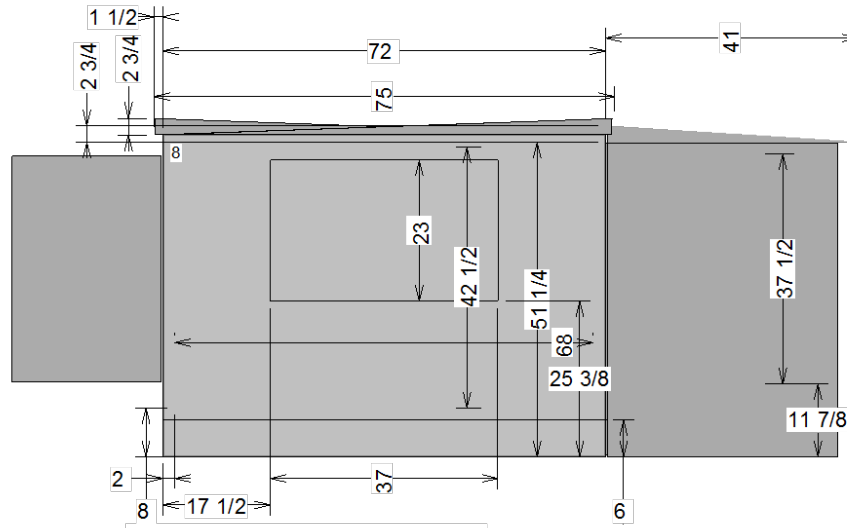
Detailed Elevation View: Left - Measurements in inches

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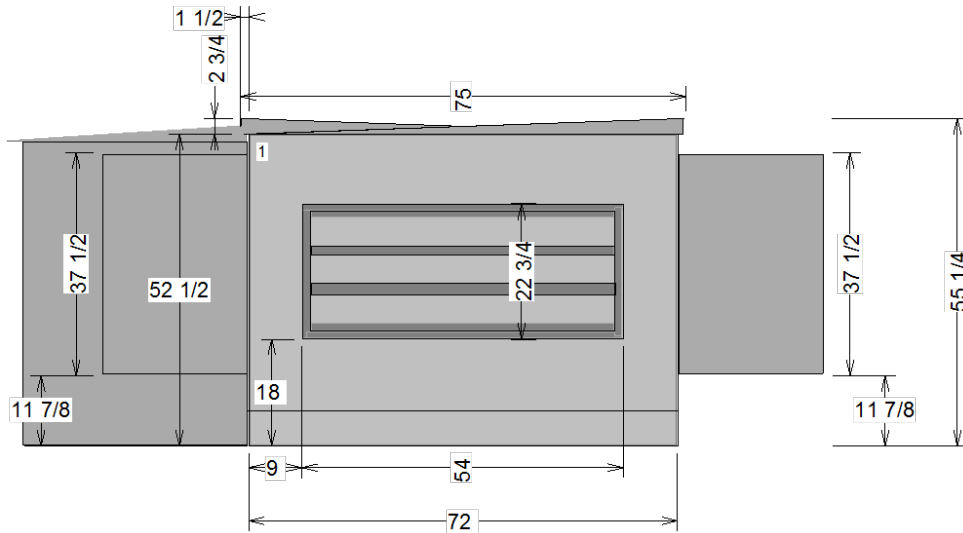
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Integral base frame: 6in. integral base frame	Sales Office:	Tags: RTU-1 R3
Paint: Slate gray		3267.3 lb / 3664.0 lb


TRANE®

Performance Climate Changer
Air Handlers



Detailed Elevation View: Front - Measurements in inches



Detailed Elevation View: Back - Measurements in inches

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Integral base frame: 6in. integral base frame	Sales Office:	Tags: RTU-1 R3
Paint: Slate gray		3267.3 lb / 3664.0 lb

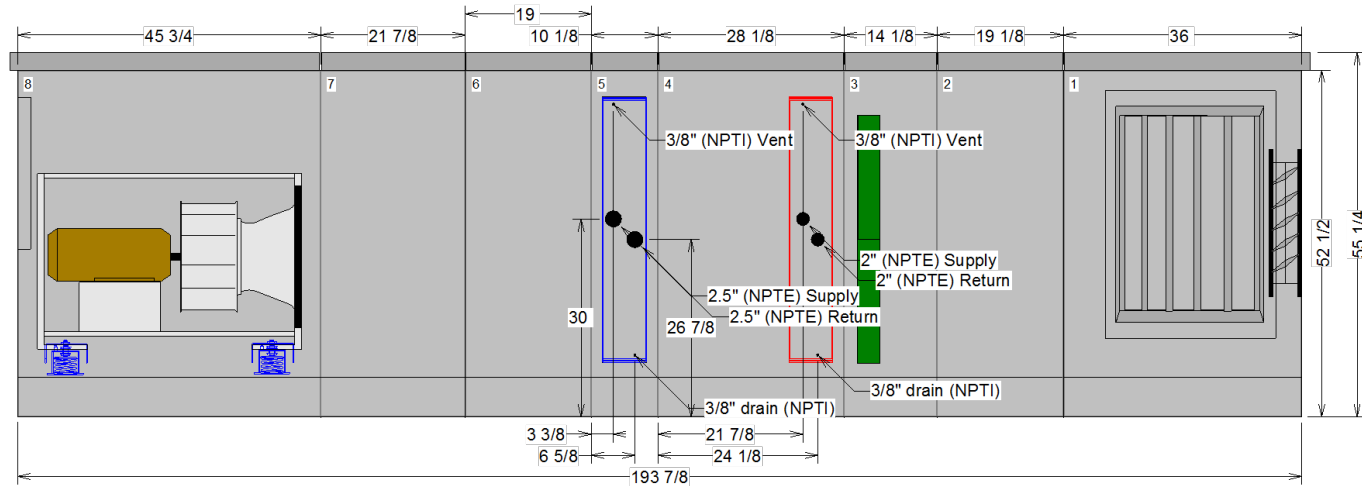

TRANE

Performance Climate Changer
Air Handlers



Job Name: VT Military Building

CSAA
Quantity: 1
Tags: RTU-1 R3



NPTI : National Pipe Thread Internal Connection
NPTE : National Pipe Thread External Connection

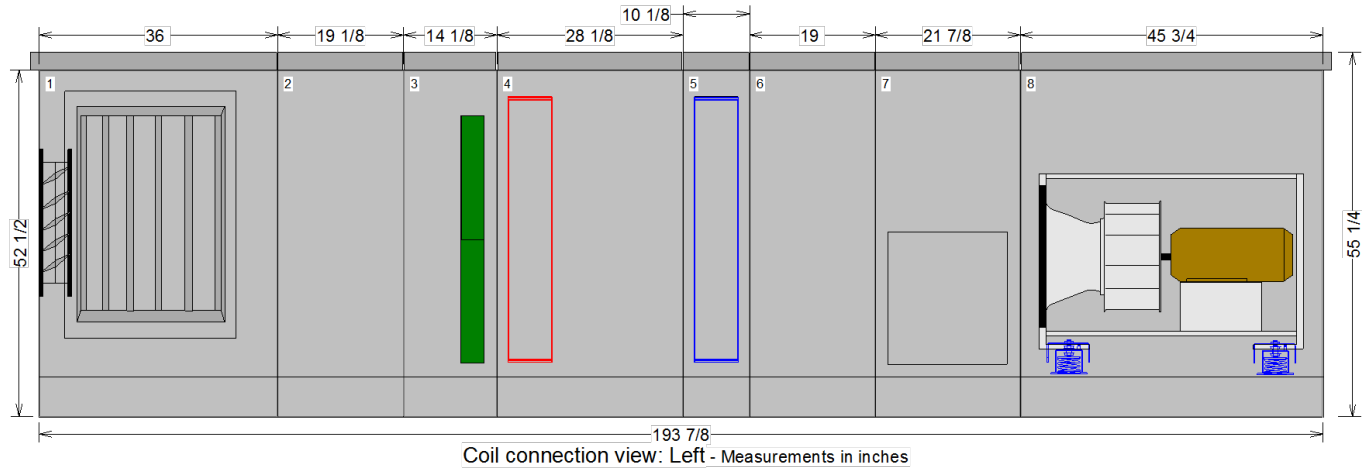
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TRANE

Performance Climate Changer
Air Handlers

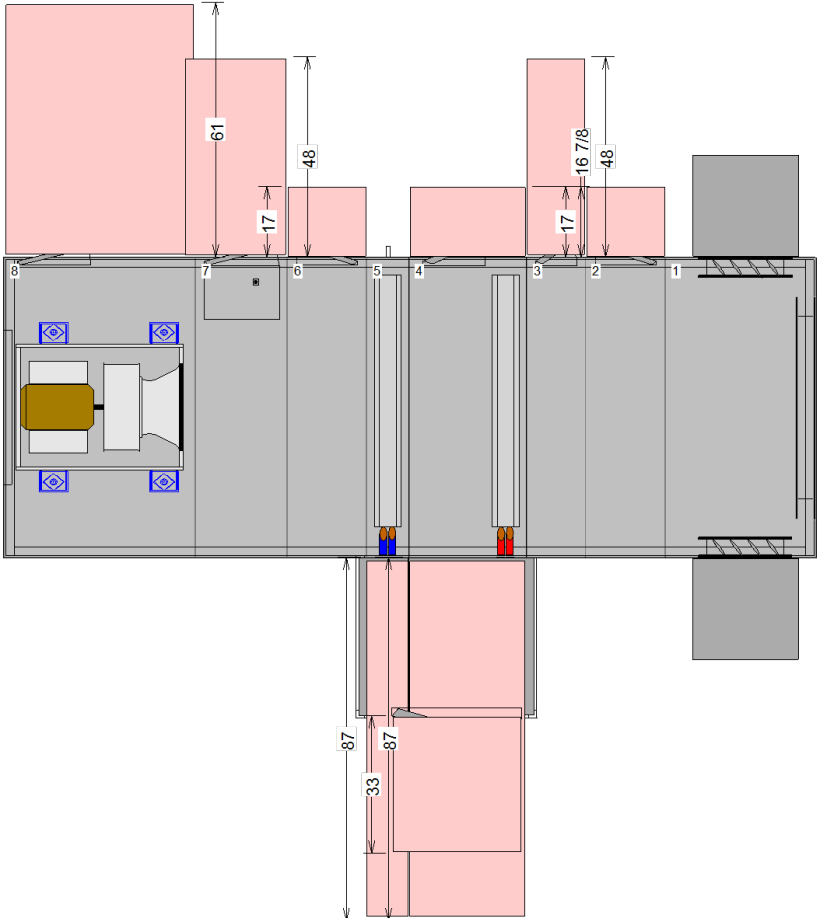


NPTI : National Pipe Thread Internal Connection
NPTE : National Pipe Thread External Connection

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Paint: Slate gray		3267.3 lb / 3664.0 lb



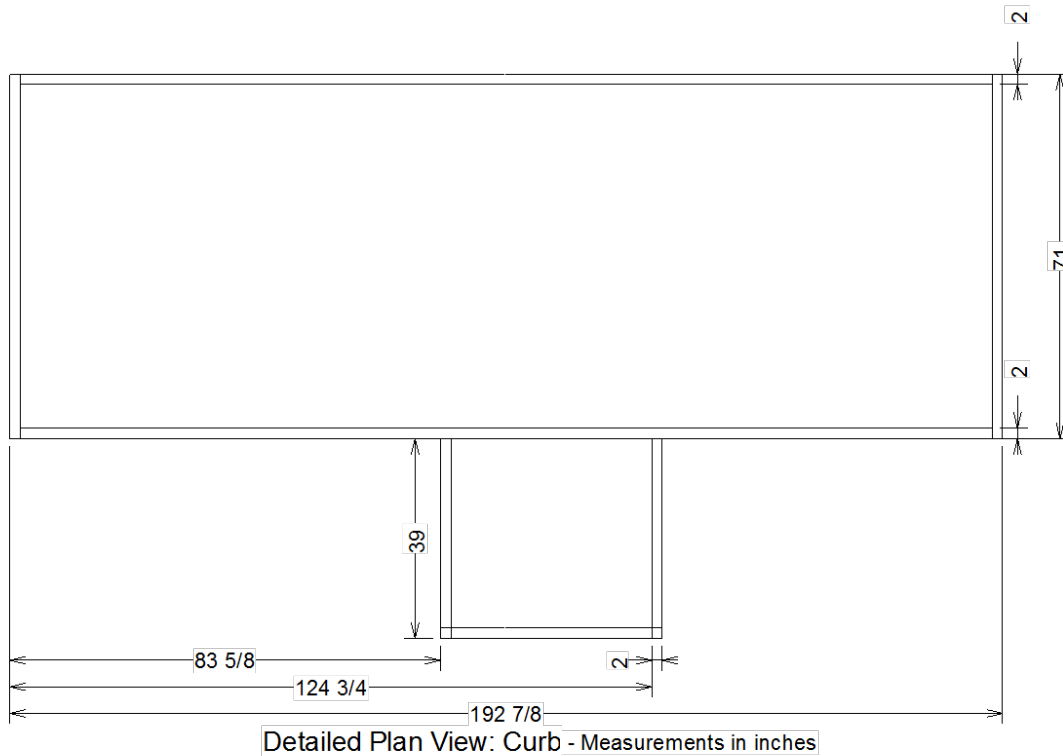
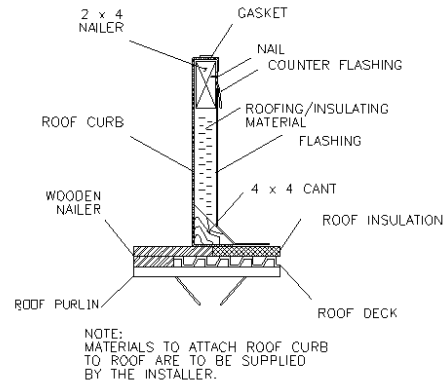
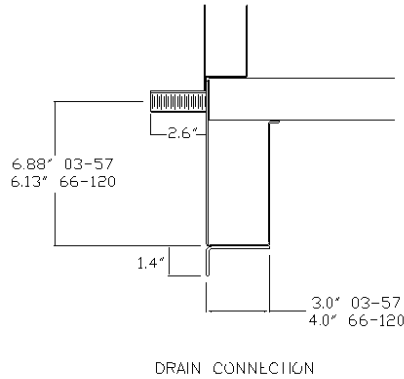
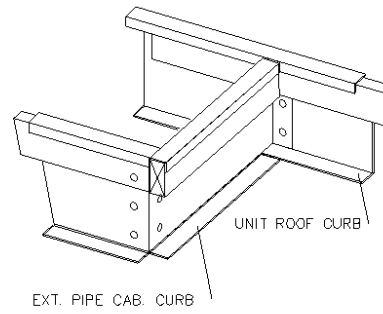
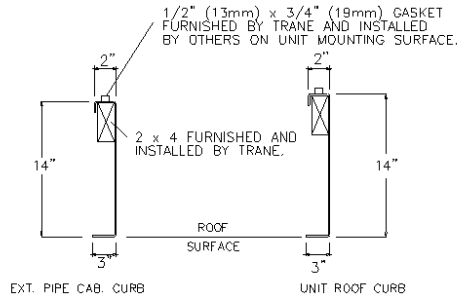


Basic Service Clearance - Plan - Measurements in inches

OPENING AND DIMENSIONS MAY VARY FROM CONTRACT DOCUMENTS / RETURN OF APPROVED DRAWINGS CONSTITUTES ACCEPTANCE OF THESE VARIANCES / NOT TO SCALE

Unit size: 17	Job Name: VT Military Building	Unit Casing: 2in Double Wall Foam
Product group: Outdoor unit	7670 cfm	Proposal Number:
Integral base frame: 6in. integral base frame	Sales Office:	Tags: RTU-1 R3
Paint: Slate gray		3267.3 lb / 3664.0 lb





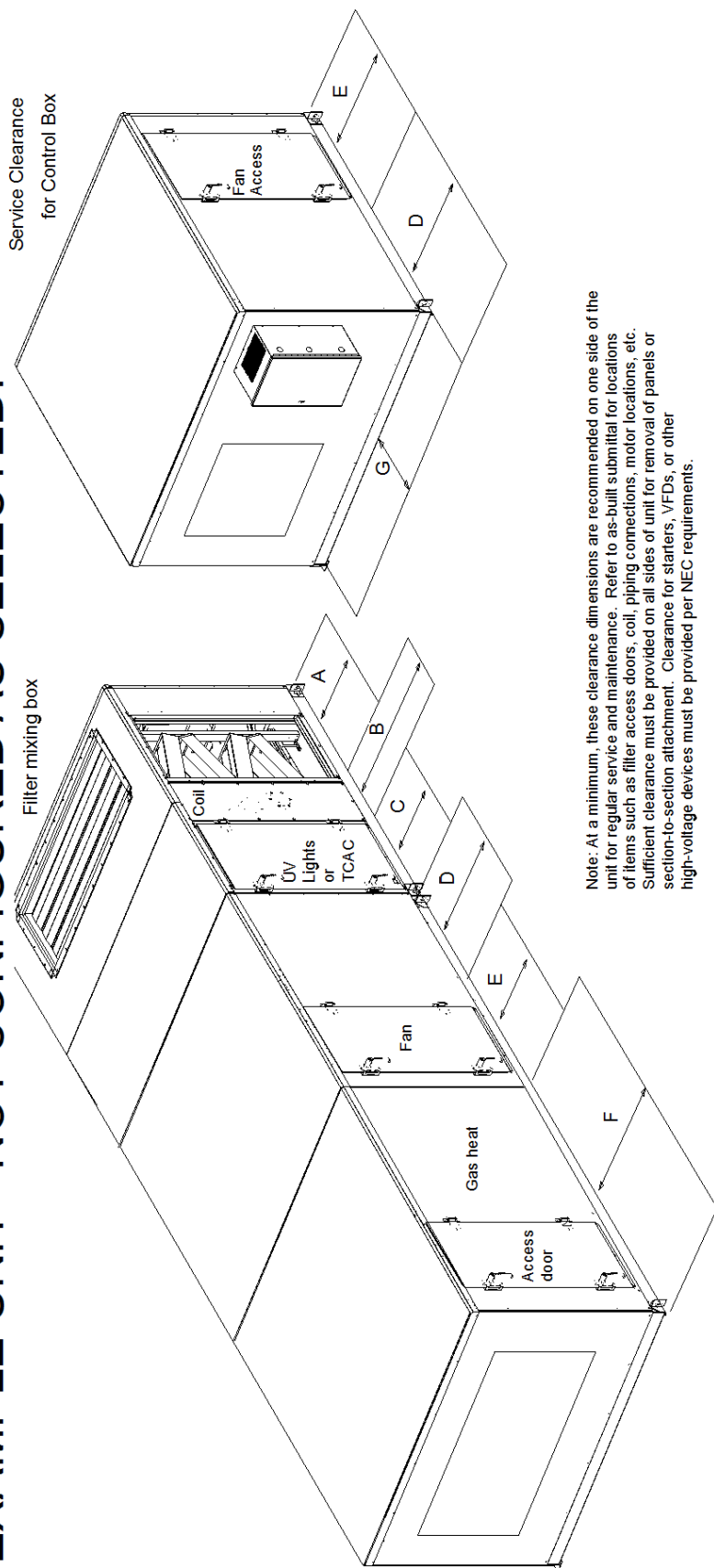
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Unit size: 17	Job Name: VT Military Building	Unit Casing: 2in Double Wall Foam
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Paint: Slate gray		3267.3 lb / 3664.0 lb


TRANE

Performance Climate Changer
Air Handlers

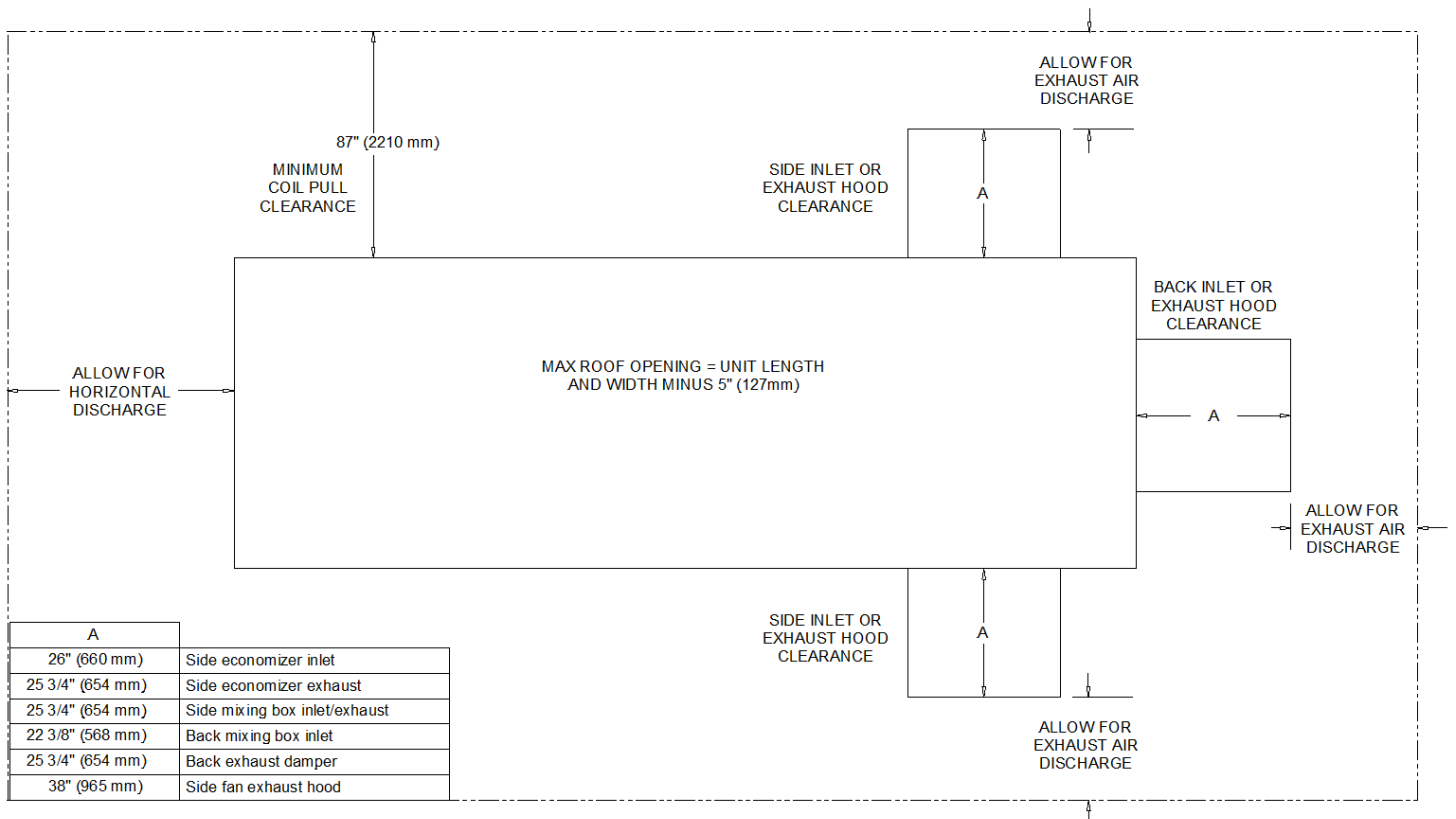
EXAMPLE UNIT - NOT CONFIGURED AS SELECTED.



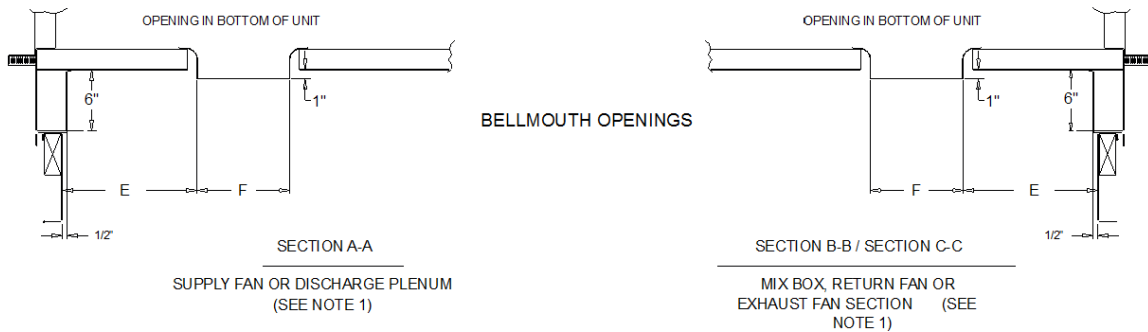
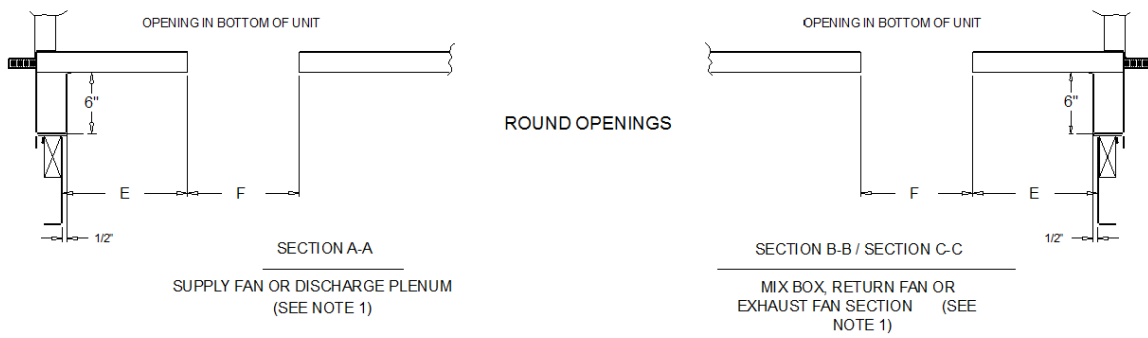
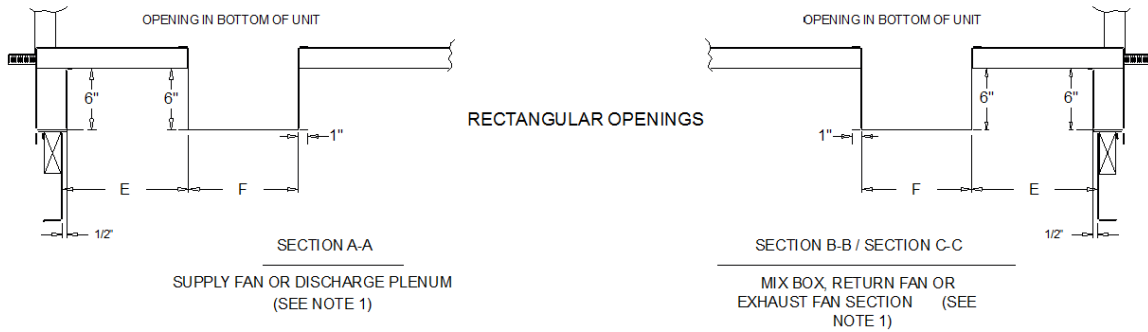
Note: At a minimum, these clearance dimensions are recommended on one side of the unit for regular service and maintenance. Refer to as-built submittal for locations of items such as filter access doors, coil, piping connections, motor locations, etc. Sufficient clearance must be provided on all sides of unit for removal of panels or section-to-section attachment. Clearance for starters, VFDs, or other high-voltage devices must be provided per NEC requirements.

Component	3	4	6	8	10	12	14	17	21	25	30	35	40	50	57	66	80	100	120
A (filter)	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	52	56	58	58
B (coil, humidifier)	48	59	66	77	82	82	87	87	95	95	109	115	128	141	141	156	156	170	197
B (staggered coil)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	67	67	76	80	88	96	96	105	105	113	129
C (UV Lights)	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	52	56	58	58
C (TCAC)	43	59	63	75	81	81	83	83	58	58	83	75	83	83	83	83	83	75	83
D (External Starter, VFD, LV box or Overload box)	61	61	61	61	61	61	61	61	64	64	64	64	64	64	64	64	64	64	64
D (Internal Starter or VFD)	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48
E (fan)	48	48	48	48	51	54	58	61	60	66	66	66	70	77	77	93	93	101	101
F (Gas Heat Ext Vestible)	N/A	N/A	89	90	108	100	100	105	115	115	118	136	140	156	156	170	179	180	N/A
F (Gas Heat Int Vestible)	N/A	N/A	56	63	74	79	84	84	92	92	106	112	125	138	138	153	153	167	194

Component	All Sizes
G (Side mount LV box)	36
G (Front mount LV box)	13

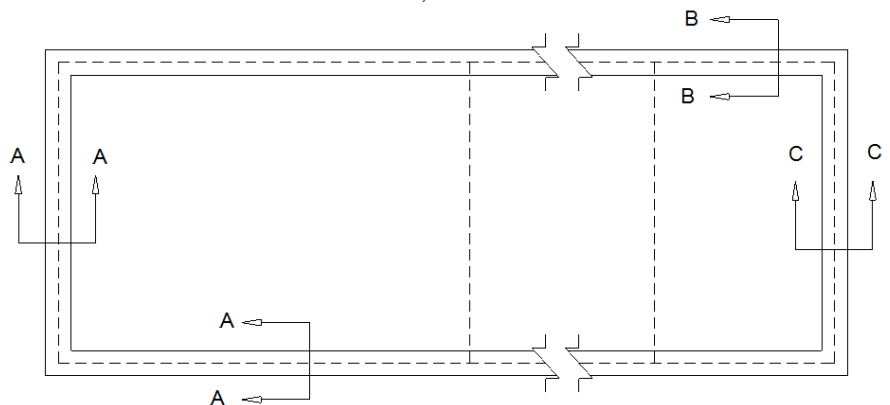


RELATIONSHIP OF CURB TO UNIT AS-BUILT

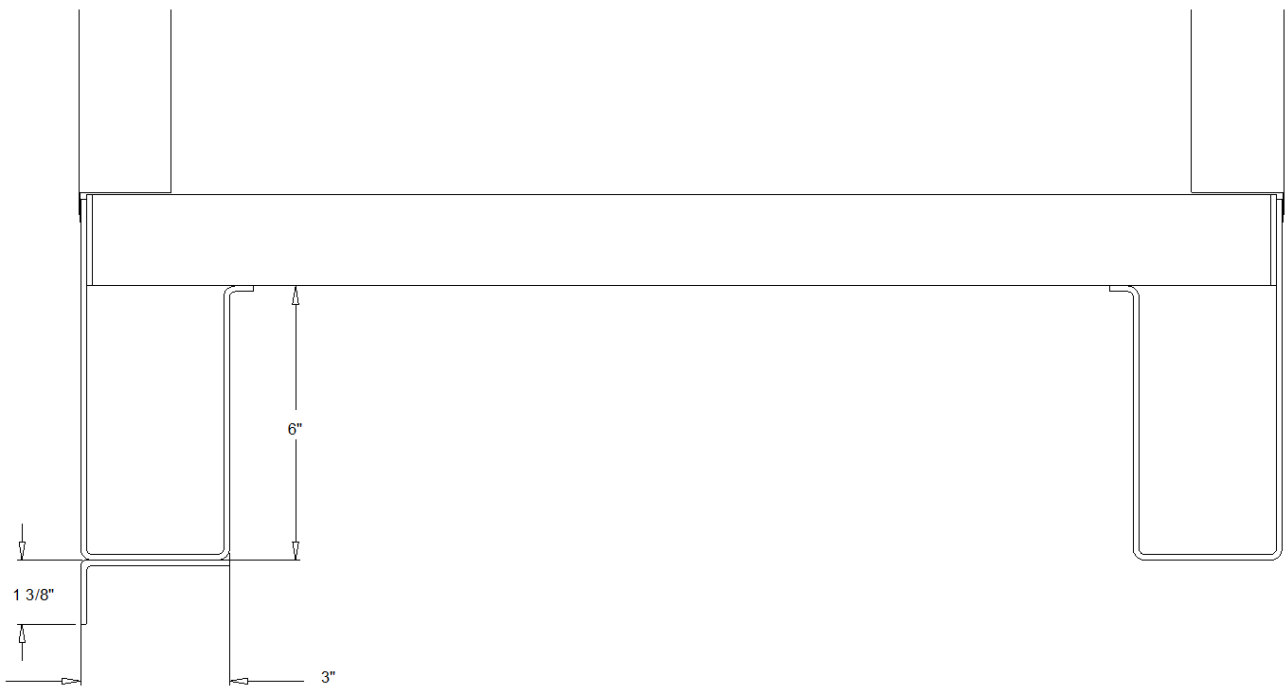


NOTE:

1. E and F are representative of dimensions on the accessory as-built used to locate opening(s) in the roof surface.

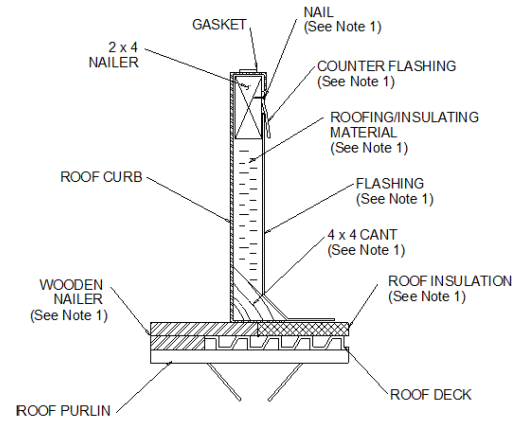
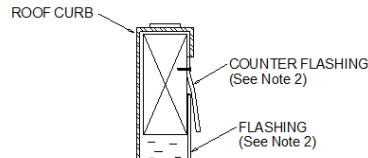
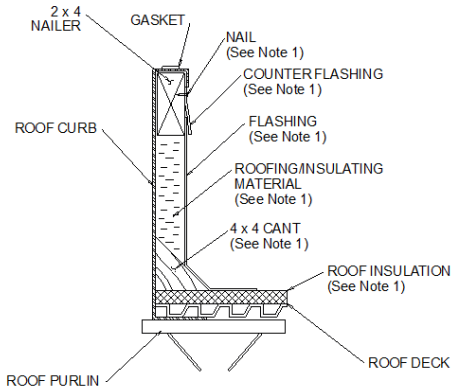


Base Detail



Recommendation for Roof Curb Installation

Refer to Performance IOM for specific installation instructions

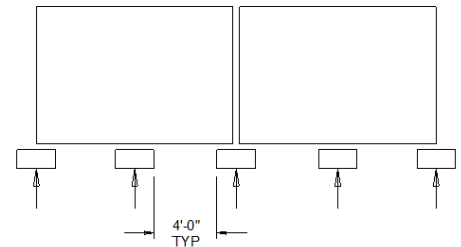
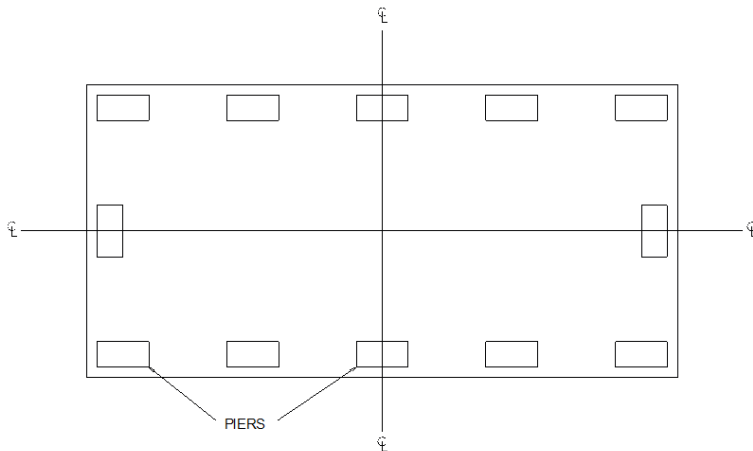


Note:

1. Materials to attach roof curb to roof are to be supplied by the installer.
2. Flashing or counter flashing should not come to or over top of curb.
3. Roof curb must be mechanically fastened to roof surface.

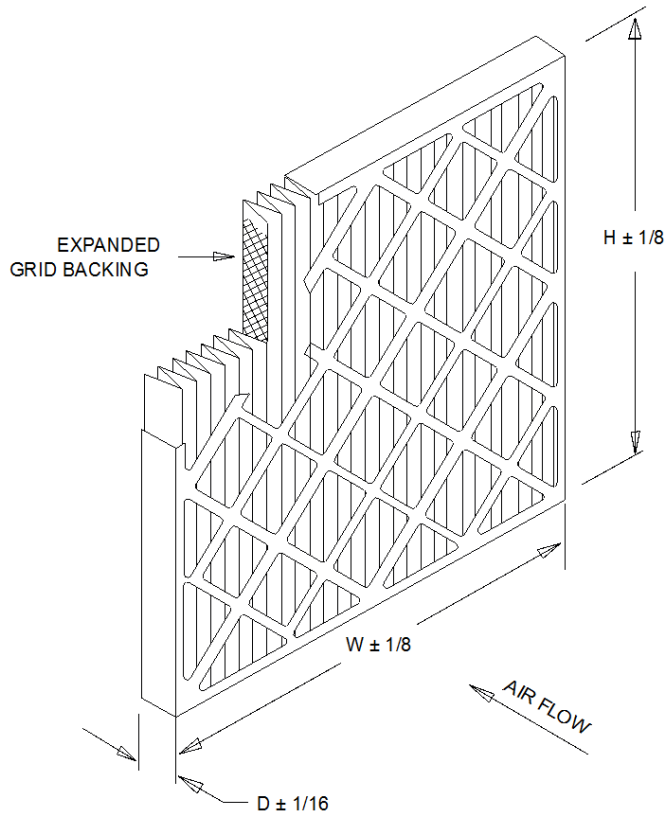
Recommendation for Pier Mounting

Refer to Performance IOM for specific installation instructions



Note:

1. Pier supports should be inside 3" (3 - 50) or 4" (57 - 120) flat of unit base. Unit cannot be supported by unit base drip leg.
2. Piers beneath shipping splits must be structurally sound to support the weight of the unit.



STANDARD CONSTRUCTION

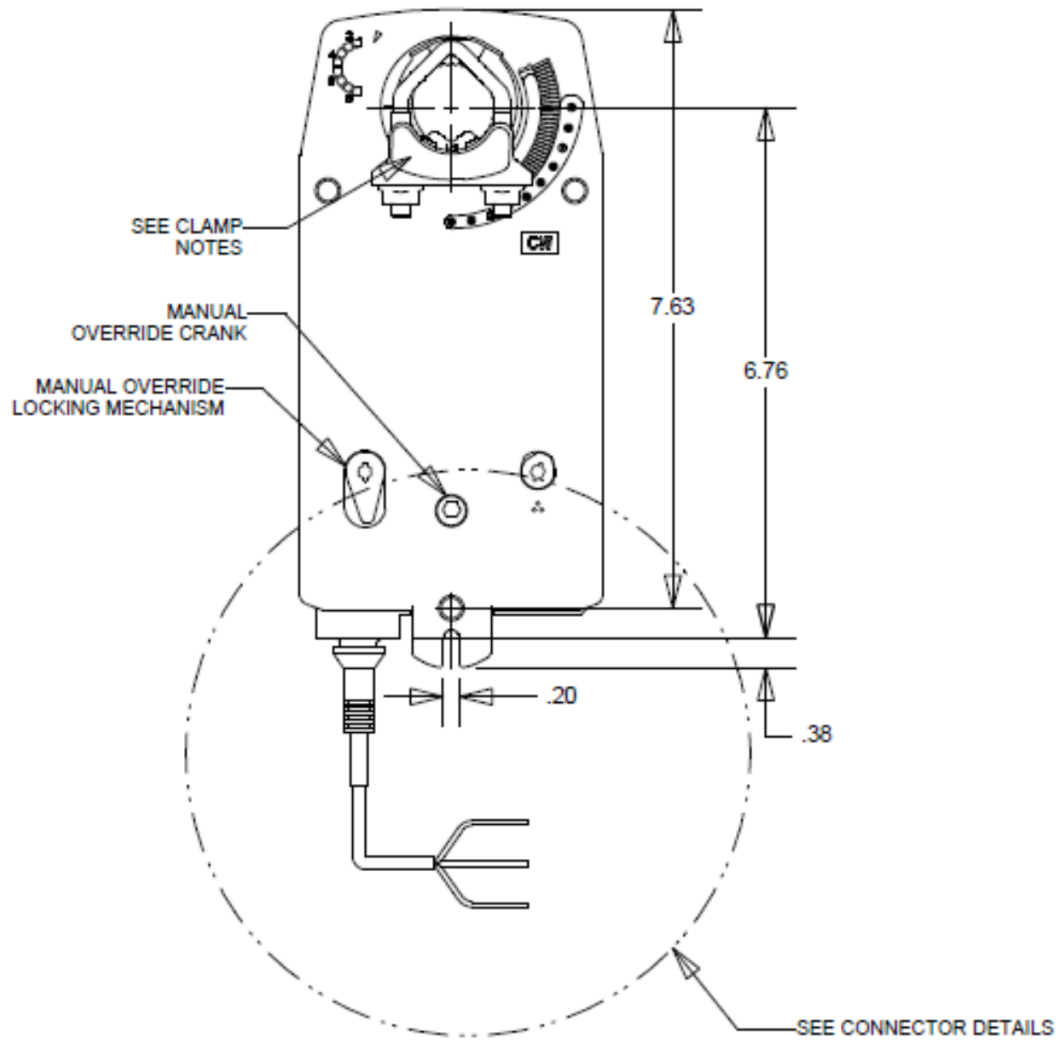
1. 100 % Synthetic White Un-Dyed Media
2. 10.0 Pleats Per Foot
3. Expanded Metal Pleat Supports
4. Moisture Resistant Beverage Board Frame
5. Double Wall Frame

NOTES

1. MERV 8-A Per ASHRAE 52.2-2007 Appendix J.
2. Final Resistance: 1/0" W.G.
3. Rated Velocity: 500 FPM
4. Class 2 Filter Per U.L. Standard 900
5. Maximum Operating Temperature: 225 DEG. F

MODEL NUMBER	NOMINAL SIZE IN. W X H X D	ACTUAL SIZE IN. W X H X D	RATED AIR FLOW CFM	INITIAL RESISTANCE IN. W.G.	MEDIA AREA SQ. FT.
MX40-STD2-217	10 X 20 X 2	9-1/2 X 19-1/2 X 1-3/4	700	0.29	4.7
MX40-STD2-220	12 X 20 X 2	11-1/2 X 19-1/2 X 1-3/4	840	0.29	5.5
MX40-STD2-210	12 X 24 X 2	11-3/8 X 23-3/8 X 1-3/4	1000	0.29	6.2
MX40-STD2-239	14 X 20 X 2	13-1/2 X 19-1/2 X 1-3/4	980	0.29	5.7
MX40-2TD2-241	14 X 25 X 2	13-1/2 X 24-1/2 X 1-3/4	1220	0.29	7.1
MX40-STD2-245	15 X 20 X 2	14-1/2 X 19-1/2 X 1-3/4	1050	0.29	6.2
MX40-STD2-201	16 X 20 X 2	15-1/2 X 19-1/2 X 1-3/4	1120	0.29	6.7
MX40-STD2-216	16 X 24 X 2	15-3/8 X 23-3/8 X 1-3/4	1340	0.29	8.0
MX40-STD2-202	16 X 24 X 2	15-1/2 X 24-1/2 X 1-3/4	1400	0.29	8.0
MX40-STD2-280	15 X 20 X 2	17-1/2 X 19-1/2 X 1-3/4	1250	0.29	7.8
MX40-STD2-212	18 X 24 X 2	17-3/8 X 23-3/8 X 1-3/4	1500	0.29	9.3
MX40-STD2-285	18 X 25 X 2	17-1/2 X 24-1/2 X 1-3/4	1570	0.29	9.7
MX40-STD2-203	20 X 20 X 2	19-1/2 X 19-1/2 X 1-3/4	1400	0.29	8.3
MX40-STD2-211	20 X 24 X 2	19-3/8 X 23-3/8 X 1-3/4	1670	0.29	9.9
MX40-STD2-204	20 X 25 X 2	19-1/2 X 24-1/2 X 1-3/4	1750	0.29	10.3
MX40-STD2-205	24 X 24 X 2	23-3/8 X 23-3/8 X 1-3/4	2000	0.29	11.7
MX40-STD2-225	25 X 25 X 2	24-1/2 X 24-1/2 X 1-3/4	2170	0.29	13.6

Actuator



EXT 04

COLOR	PIN#	AWG	TYPE	A	B	C
BLACK	1	18	COM	BLK		
	2	18	HOT	RED		
WHITE	1	18	COM		PNK	
	2	18	IN		WHT	
WHITE	1	18	COM			GRY
	2	18	OUT			ORG

CONNECTOR 'A'
MOLEX#: 50-36-1678
PIN#: 39-00-0041

CONNECTOR 'B'
MOLEX#: 39-01-2025
PIN#: 39-00-0039

CONNECTOR 'C'
MOLEX#: 39-01-3029
PIN#: 39-00-0041

Thermal Sensor

Resistance Temperature Characteristics			
Temperature	Resistance		Temp Coeff
	Min.	Max.	
-40°C	320.9K	369.0K	-6.61 % / °C
-25°C	125.6K	142.3K	-6.04% / °C
0°C	31.17K	34.6K	-5.16 % / °C
25°C	9.56K	10.44K	-4.40 % / °C
65°C	2.012K	2.158K	-3.5 % / °C

Specifications:

Probe to be permanently identified with the Trane part number, vendor part number and date code or lot code.

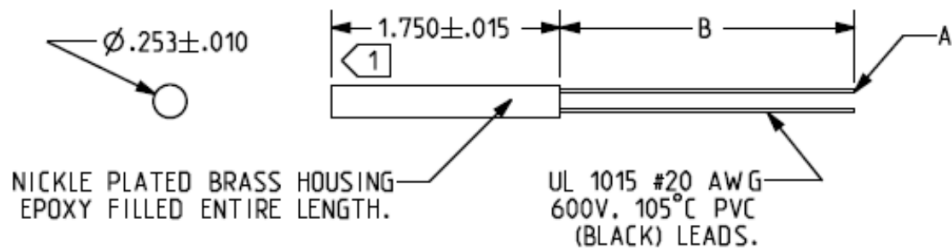


FIGURE 1

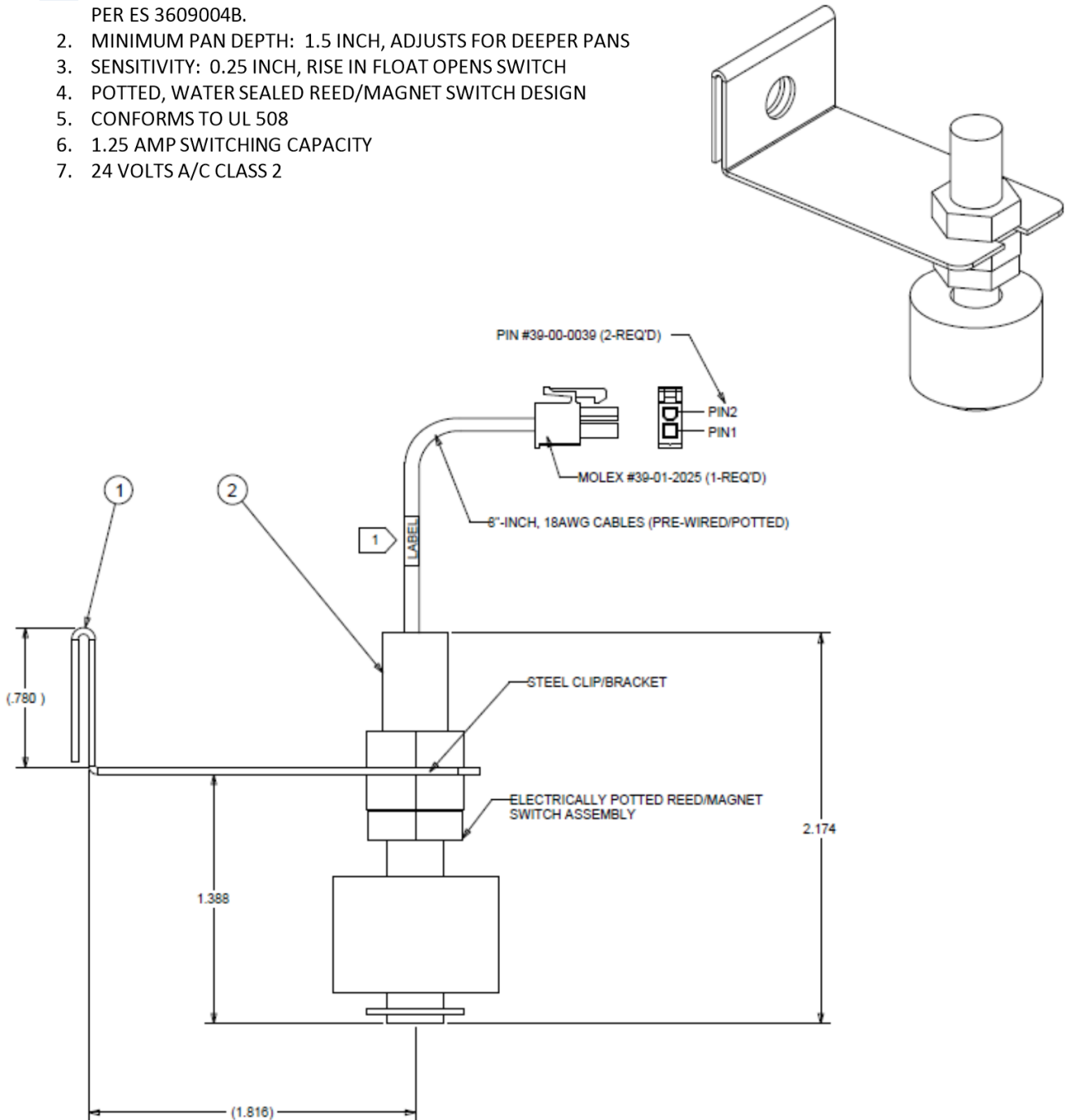


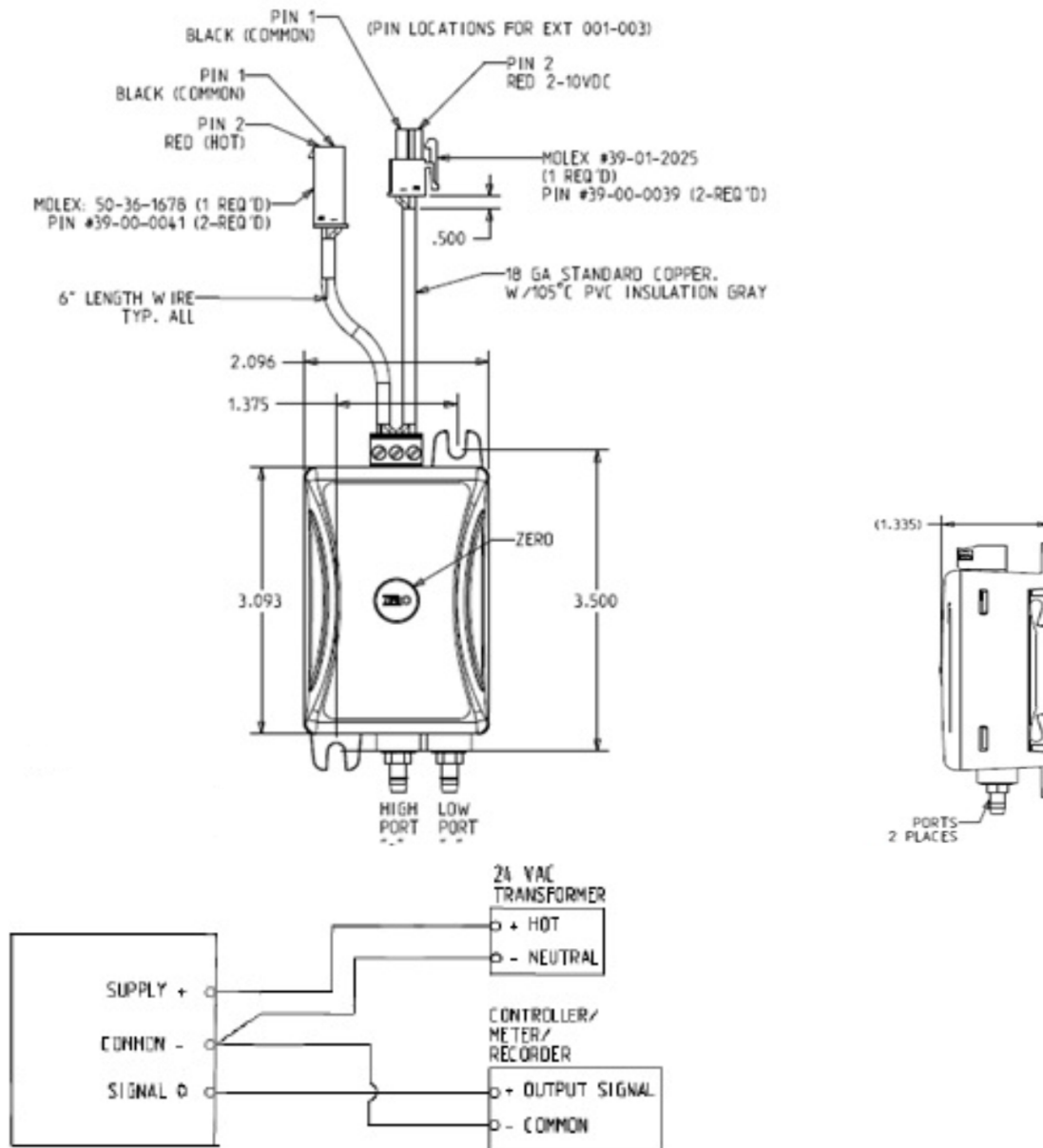
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Condensate Overflow Switch

NOTES:

1. PARTS MUST HAVE TRANE PART NUMBER LABEL WITH PAR CODE PER ES 3609004B.
2. MINIMUM PAN DEPTH: 1.5 INCH, ADJUSTS FOR DEEPER PANS
3. SENSITIVITY: 0.25 INCH, RISE IN FLOAT OPENS SWITCH
4. POTTED, WATER SEALED REED/MAGNET SWITCH DESIGN
5. CONFORMS TO UL 508
6. 1.25 AMP SWITCHING CAPACITY
7. 24 VOLTS A/C CLASS 2

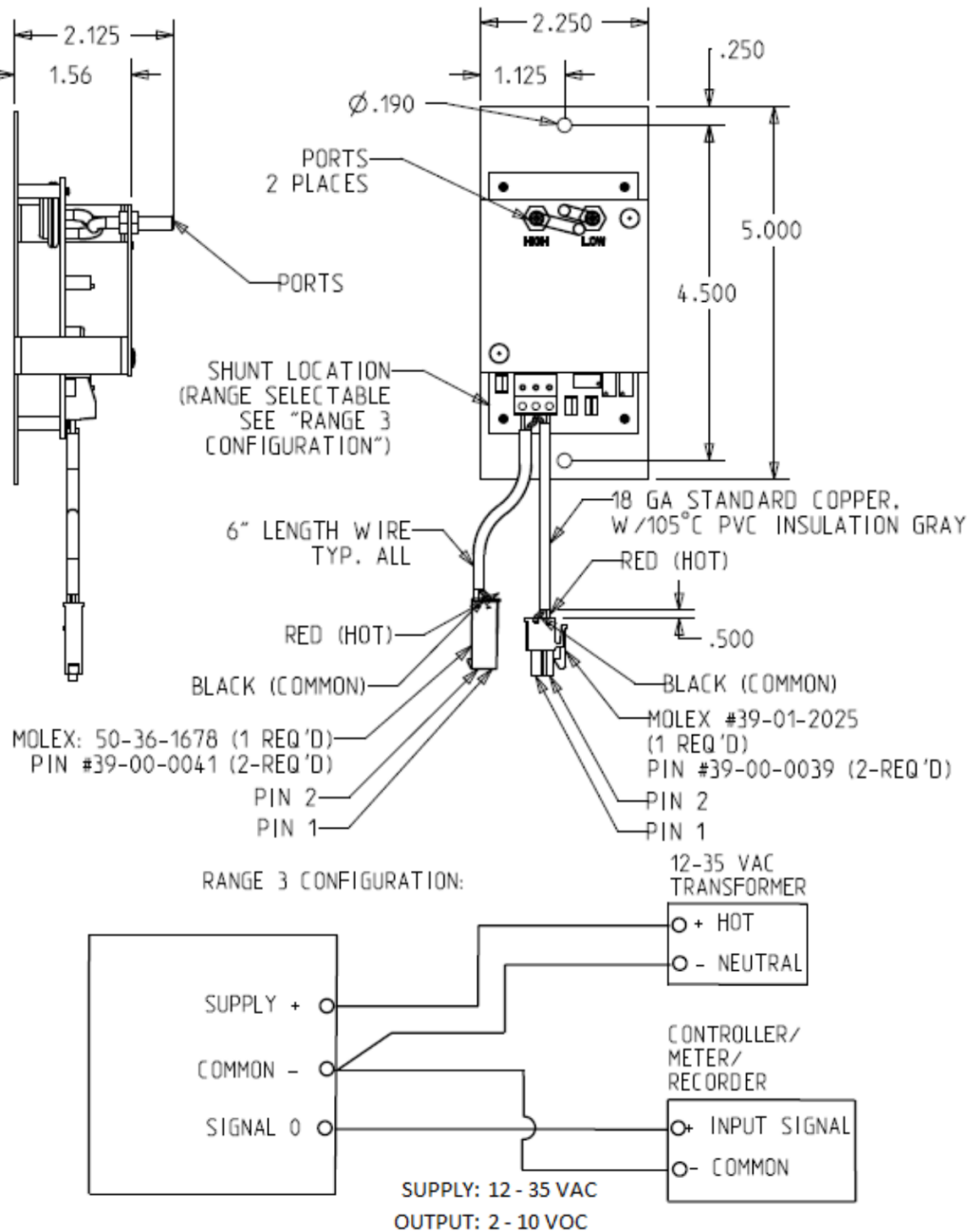




NOTE:

1. PRESSURE CONNECTIONS: 3/16" OD BARBED FITTING FOR 1/4" TUBING
2. OPERATING TEMPERATURE: 0 - 85 C
3. COMPENSATED TEMPERATURE: 0 - 50 C
4. LOAD IMPEDANCE: 500 OHMS
5. TERMINATION: SCREW TERMINAL BLOCK
6. ACCURACY: 0.25%
7. INPUT VOLTAGE: 24VAC (NOMINAL)

Flow Meter



NOTE:

1. OVERPRESSURE: 10 PSID
2. PRESSURE CONNECTIONS 3/16 OD BARBED FITTING FOR 1/4 TUBING
3. OPERATING TEMP RANGE: 0 - 175 F
4. LOAD IMPEDANCE: 1 K OHMS MIN (VDC OUTPUT UNITS)
5. 3 WIRE OUTPUT
6. TERMINATION: UNPLUGGABLE SCREW TERMINAL BLOCK
7. PART TO BE LABELED WITH TRANE P/N
8. PART TO BE LABELED WITH 2D BARCODE PER ES.
9. COATING TO BE APPLIED TO CIRCUIT BOARD AS PER S65380048

GENERAL

Outdoor air handling units will be shipped with all openings covered to protect unit interior from in-transit debris.

Installing contractor is responsible for long term storage in accordance with the Installation, Operation, and Maintenance manual (CLCH-SVX07*-EN).

Unit shall be UL and C-UL Listed.

Supply fans within the scope of AHRI Standard 430 are "Certified by the AHRI Central Station Air-Handling Unit (AHU) Certification Program, based on AHRI Standard 430/431. AHRI certified units are subject to rigorous and continuous testing, have performance ratings independently measured and are third-party verified. Certified units may be found in the AHRI Directory at www.ahridirectory.org".

Unit sound performance data shall be reported as sound power. Trane, in providing this program and data, does not certify or warrant NC levels. These levels are affected by factors specific to each application and/or installation and therefore unable to be predicted or certified by Trane. Refer to product data for specific fan footnote references.

Refer to product data for AHRI certification status. Propylene glycol and calcium chloride, or mixtures thereof, are outside the scope of AHRI Standard 410 and, therefore, do not require AHRI rating or certification. For coils within the scope of AHRI Standard 410 cooling coil performance is 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. Heating performance for heat pump or condenser mode is not certified.

Unit Construction

Outdoor unit roofs shall incorporate a standing seam on the exterior to ensure a rigid roof construction and prevent water infiltration. Roof assembly shall overhang all walls by 1.5-inch minimum to prevent sheeting from roof to side panels. Rain gutters shall also be provided over all doors shorter than total unit height to direct rain away from the door assembly. Outdoor roofs shall be sloped, not less than 0.125 inches per foot, for water drainage. Where outdoor units are shipped in multiple sections, provide standing-seam joiners at each split with adhesive, hardware, and cover strips for field joining by the installing contractor.

All unit panels shall be 2" solid, double-wall construction to facilitate cleaning of unit interior. Unit panels shall be provided with a mid-span, no-through-metal, internal thermal break. Casing thermal performance shall be such that under 55°F supply air temperature and design conditions on the exterior of the unit of 81°F dry bulb and 73°F wet bulb, condensation shall not form on the casing exterior. Casing construction will comply with NFPA 90A.

All outdoor AHU interior casing panels will be made of galvanized steel.

Unit Paint

External surface of unit casing will be coated with water-based polyurethane paint. Color to be standard "Slate Gray". Factory-painted units will be able to withstand a salt spray test in accordance with ASTM B117 for a minimum of 500 consecutive hours and shall meet the following requirements following the salt-spray test:

- Mean scribe creepage rating of at least 6 per ASTM D1654 procedure A
- Blister size no larger than #6 per ASTM D714
- Blister density no greater than Medium per ASTM D714
- No onset of red rust

Casing Deflection

The casing shall not exceed 0.0042 inch deflection per inch of panel span at 1.00 times design static pressure. Maximum design static shall not exceed +8 inches w.g. in all positive pressure sections and -8 inches w.g. in all negative pressure sections.

Floor Construction

The unit floor shall be of sufficient strength to support a 300.0 lb load during maintenance activities and shall deflect no more than 0.0042 inch per inch of panel span.

Unit Base

Manufacturer to provide a full perimeter integral base frame for either ceiling suspension of units or to support and raise all sections of the unit for proper trapping. Indoor unit base frame will either be bolted construction or welded construction. All outdoor unit base frames shall be welded construction. For indoor units, refer to schedule for base height and construction type. Contractor will be responsible for providing a housekeeping pad when unit base frame is not of sufficient height to properly trap unit. Unit base frames not constructed of galvanized steel shall be chemically cleaned and coated with both a rust-inhibiting primer and finished coat of rust-inhibiting enamel. Unit base height to be included in total height required for proper trap height.

Insulation

Panel insulation shall provide a minimum thermal resistance (R) value of 13 ft²-h-°F/Btu throughout the entire unit. Insulation shall completely fill the panel cavities in all directions so that no voids exist and settling of insulation is prevented.

Drain Pan

In sections provided with a drain pan, the drain pan shall be designed in accordance with ASHRAE 62.1. To address indoor air quality (IAQ) the drain pan shall be sloped in two planes promoting positive drainage to eliminate stagnant water conditions. Drain pan shall be insulated, and of double wall construction. The outlet shall be the lowest point on the pan, and shall be of sufficient diameter to preclude drain pan overflow under normally expected operating conditions. All drain pans connections shall have a threaded connection, extending a minimum of 2-1/2" beyond the unit base, and shall be made from the same material as the drain pan. Drain pan located under a cooling coil shall be of sufficient size to collect all condensate produced from the coil.

Refer to Product Data for specific information on which sections are supplied with a drain pan, the drain pan material and connection location.

Access Door Construction

Access doors shall be 2" double wall construction. Interior and exterior door panels shall be of the same construction as the interior and exterior wall panels respectively. All doors shall be provided with a thermal break construction of door panel and door frame. Gasketing shall be provided around the full perimeter of the doors to prevent air leakage. Surface mounted handles shall be provided to allow quick access to the interior of the functional section and to prevent through cabinet penetrations that could likely weaken the casing leakage and thermal performance. Handle hardware shall be designed to prevent unintended closure. Outswing doors shall have easily removable hinges and handles that can be relocated to change the door swing if needed. Door hinges shall be made of galvanized steel.

All doors shall be a minimum of 60" high when sufficient height is available or the maximum height allowed by the unit height.

Door handles shall be provided for each latching point of the door necessary to maintain the specified air leakage integrity of the unit. An optional shatterproof window shall be provided in access doors where indicated on the plans. Window shall either be single pane, or thermal dual pane, as defined on schedule. Window shall be capable of withstanding unit operating pressures and shall be safe for viewing UV-C lamps.

Refer to Product Data for specific information on which sections are supplied with an access door, the door location, a single handle and a window.

Factory-supplied Curb

Outdoor AHU will be provided with a factory-supplied roof curb. Curb will be shipped to jobsite disassembled. Contractor will be responsible for assembly and mounting to roof structure per the Roof Curb Manual (CLCH-SVN05*-EN). Units with factory-supplied external piping cabinet(s), the factory-supplied curb will include a curb section for the pipe cabinet(s).

Refer to the Roof Curb Detail drawing and Product Data section of submittal for height of factory-supplied roof curb(s).

Lifting Instructions

The air handling units must be rigged, lifted, and installed in strict accordance with the Installation, Operation, and Maintenance manual (CLCH-SVX07G-EN). The units are also to be installed in strict accordance with the specifications. Units may be shipped fully assembled or disassembled to the minimum functional section size in accordance with shipping and job site requirements.

Outdoor units shall be shipped on frame for the purpose of mounting units on a roof curb or field-supplied pier support system. Refer to the Product Data section for type of the base frame provided (for roof curb or pier-mount).

All units will be shipped with an integral base frame designed with the necessary number of lift points for safe installation. All lifting lugs are to be utilized during lift. The lift points will be designed to accept standard rigging devices and be removable after installation.

MIXING SECTION

A mixing section shall be provided to support the damper assembly for outdoor, return, and/or exhaust air.

Inlet Hoods

Inlet hoods are provided on the outside air openings and equipped with high performance moisture eliminators to minimize water carryover from the outside into the unit casing. Eliminators also perform the function of a bird screen to prevent nesting.

Refer to the unit As-Built and Product Data section for specific information on which sections are supplied with inlet hood.

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Inlet hoods are provided on the outside air openings and equipped with high performance moisture eliminators to minimize water carryover from the outside into the unit casing. Eliminators also perform the function of a bird screen to prevent nesting.

Refer to the unit As-Built and Product Data section for specific information on which sections are supplied with inlet hood.

External Pipe Cabinets

Piping cabinet is supplied factory-assembled of the same construction as the main unit casing. Piping cabinets are shipped separate to be field installed on the side of the unit.

Refer to the unit As-Built and Product Data section for specific information on which sections are supplied with a corresponding pipe cabinet and pipe cabinet access doors.

Dampers

Dampers shall modulate the volume of outdoor, return, or exhaust air. The dampers shall be of double-skin airfoil design with metal, compressible jamb seals and flexible blade-edge seals on all blades. The blades shall rotate on stainless-steel sleeve bearings. The dampers shall be rated for a maximum leakage rate of 3 cfm/ft² at 1 in. w.g. complying with ASHRAE 90.1 maximum damper leakage. All leakage testing and pressure ratings shall be based on AMCA Standard 500-D. Dampers may be arranged in a parallel or opposed-blade configuration.

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Title 24

The following specifications apply only to units with outside air and return air dampers, with actuators. The 5 year warranty applies only to these items.

This unit contains Economizer that meets or exceeds all mandatory requirements prescribed by Title 24, including but not limited to:

- 5 yr parts only warranty
- Successfully tested to 60,000 Actuations
- Less than 10 cfm/sq.ft. of damper leakage at 1" WG per AMCA 500L

Mixing Section Damper Actuators

Spring return actuators shall be mounted with the outside air damper normally closed and the return air damper normally open. Actuator feedback will be wired to the unit controls system.

FILTER SECTION

A section shall be provided to support the filter rack as indicated throughout the unit. Refer to Product Data and As-Built sections of the submittal for specific locations within each unit.

Primary Filters

2-inch pleated media filters made with 100% synthetic fibers that are continuously laminated to a supported steel-wire grid with water repellent adhesive shall be provided. Filters shall be capable of operating up to 625 fpm face velocity without loss of filter efficiency and holding capacity. The filters shall have a MERV 8 rating when tested in accordance with the ANSI/ASHRAE Standard 52.2.

Dirty Filter Switch

A differential pressure switch piped to both sides of the filter shall indicate filter status.

COIL SECTION WITH FACTORY INSTALLED COIL

The coil section shall be provided complete with coil and coil holding frame. The coils shall be installed such that headers and return bends are enclosed by unit casings. If two or more cooling coils are stacked in the unit, an intermediate drain pan shall be installed between each coil and be of the same material as the primary drain pan. Like the primary drain pan, the intermediate drain pan shall be designed being of sufficient size to collect all condensation produced from the coil and sloped to promote positive drainage to eliminate stagnant water conditions. The intermediate pan shall begin at the leading face of the water-producing device and be of sufficient length extending downstream to prevent condensate from passing through the air stream of the lower coil. Intermediate drain pan shall include downspouts to direct condensate to the primary drain pan. The outlet shall be located at the lowest point of the pan and shall be sufficient diameter to preclude drain pan overflow under any normally expected operating condition.

Coil with Inspection

The coil section complete with a double-wall, shall include a removable door downstream of the coil for inspection, cleaning, and maintenance. Interior and exterior door panels shall be of the same construction as the interior and exterior wall panels, respectively. All doors shall be provided with a thermal break construction of door panel and door frame.

Hydronic coils shall be supplied with factory installed drain and vent piping to unit casing exterior. Piping is to facilitate field installation of automatic venting or drain valves on coils, which are not supplied with unit. *Refer to the Product Data section of the submittal for the units and/or coils supplied with drain and vent piping.*

Water Coils (UP, WP, UW, UU, UA, 3W, 3U, W, 5W, 5A, WD, 5D, D1, D2, P, or TT)

The coils shall have aluminum fins and seamless copper tubes. Copper fins may be applied to coils with 5/8-inch tubes. Fins shall have collars drawn, belled, and firmly bonded to tubes by mechanical expansion of the tubes. The coil casing may be galvanized or stainless steel. Refer to the Product Data section of the submittal for the coil casing material.

The coils shall be proof-tested to 300 psig and leak-tested under water to 200 psig. Refer to the Product Data section of the submittals for AHRI certification status.

Coil connections are constructed of cast iron with female connections, steel block with female connections or steel pipe with male connections. Type P or TT coil connections do not extend out of unit casing. All other water coil types have connections that extend out beyond unit casing. Headers on downstream coil bank of staggered coil sections do not extend beyond the unit casing and must be completed by the on-site piping contractor.

Tubes are 1/2" [13 mm] OD 0.025" [0.635 mm] thick copper.

Low Limit

A double-pole single throw (1 NO, 1 NC) low limit switch shall be wired to a momentary push-button manual reset circuit (without Trane wiring the device is auto-resetting). Low Limit Switch circuit will be wired as Normally Closed, and will trip a lockout circuit upon temperature dropping below the set point, or general failure of the circuit. Lockout circuit will be factory wired into the Fan VFDs or Starters if present. Set point is default set to 35F at factory, but is adjustable if increased set point is needed due to installation site ducting to coil causing cold spot in a unique location of the coil. Capillaries are serpentine across the entering or leaving side of the coil with routing Trane designed to maximize coil coverage and cover critical top and bottom 3 inches of the coil for any given capillary and coil area configuration (Trane designed and historically proven capillary routing does not necessarily match device manufacturer's generic installation recommendations). The bends of the capillaries shall be curved and fastened with capillary clips to prevent crimping and minimize wear. A separate low limit shall be provided for each coil in a coil stack.

Condensate Overflow Switch

A float switch conforming to UL 508 shall be factory-installed in the drain pan that will detect a high condensate water level and be used to shut off the air handler in the event that the primary drain is blocked to comply with IMC 2006. The float switch shall be located at a point higher than the primary drain line connection and below the overflow rim of the drain pan.

ACCESS/INSPECTION / TURNING SECTION

A section shall be provided to allow additional access/inspection of unit components and space for field-installed components as needed. An access door shall be provided for easy access. All access sections shall be complete with a double-wall, removable door downstream for inspection, cleaning, and maintenance. Interior and exterior door panels shall be of the same construction as the interior and exterior wall panels, respectively. All doors shall be provided with a thermal break construction of door panel and door frame.

DIRECT-DRIVE PLENUM FAN SECTION

The fan type shall be provided as required for stable operation and optimum energy efficiency. The fan shall be a single-width, single-inlet, multiblade-type direct-drive plenum fan. Motor bearing life of the direct-drive plenum fan shall be not less than L-10 250,000 hrs. *Refer to the Product Data section for fan quantity and number of blades selected within each unit.* Central Station Air Handling Unit Supply Fans are "Certified by the AHRI Central Station Air-Handling Unit (AHU) Certification Program, based on AHRI Standard 430/431. AHRI certified units are subject to rigorous and continuous testing, have performance ratings independently measured and are third-party verified. Certified units may be found in the AHRI Directory at www.ahridirectory.org" Central Station Air Handling Unit Supply Fans shall be tested and rated in-accordance with AHRI Standard 260 for sound performance.

Fans that are selected with inverter balancing shall first be dynamically balanced at design RPM. The fans then will be checked in the factory from 25% to 100% of design RPM to insure they are operating within vibration tolerance specifications, and that there are no resonant frequency issues throughout this operating range. Inverter balancing that requires lockout frequencies inputted into a variable frequency drive to in order to bypass resonant frequencies shall not be acceptable. If supplied in this manner by the unit manufacturer, the contractor will be responsible for rebalancing in the field after unit installation. Fans selected with inverter balancing shall have a maintenance free grounding assembly installed on the fan motor to discharge both static and induced shaft currents to ground.

On units supplied with plenum or motorized impeller fans, door guard(s) shall be supplied on the access door(s) to the fan and those downstream access door(s) where unintended access to the plenum or motorized impeller fan could occur. Door guard is intended to deter unauthorized entry and incidental contact with rotating components. *Refer to the Product Data section for fans with access door guard(s).*

Motor Frame

The motor shall be mounted integral to the isolated fan assembly and furnished by the unit manufacturer. The motor is mounted inside the unit casing on an adjustable base to permit adjustment of drive belt tension (not applicable for direct drive plenum fans). The motor shall meet or exceed all NEMA Standards Publication MG 1 requirements and comply with NEMA Premium efficiency levels when applicable except for fractional horsepower motors which are not covered by the NEMA classification. The motor shall be T-frame, squirrel cage with size, type, and electrical characteristics as shown on the equipment schedule. *Refer to the Product Data section for selected fan motors within each unit.*

Two-Inch Spring Isolators

Direct-drive fan and motor assemblies shall be internally isolated from the unit casing with 2-inch (50.8 mm) deflection spring isolators. The isolation system shall be designed to resist loads produced by external forces, such as earthquakes, and conform to the current IBC seismic requirements.

Design VFD frequency is less than line frequency. Use caution during startup to ensure the VFD will not operate at the line frequency, or ensure that the air delivery system can handle being over-pressurized.

Single Transmitter

The fan shall have an airflow measurement system to measure fan airflow directly or to measure differential pressure that can be used to calculate fan airflow. The system shall predict airflow within +/5 percent total accuracy (device & transmitter) when operating within the stable operating region of the fan curve. On units supplied with multiple direct drive fans, one fan is tubed and one transmitter is supplied for the total array. The submitted fan airflow performance and noise levels shall not be affected by the installation of the device. Any device that provides an obstruction to the fan inlet will not be accepted. *Refer to the Product Data section for fans with flow meters.*

Motor Wiring Conduit

The fan motor wiring shall be factory-wired to the unit-mounted disconnect, variable frequency drive, or external motor junction box within flexible metal conduit of adequate length so that the fan vibration isolation, if applicable, will not be restricted. Refer to the Product Data section for fans with motor wiring conduit.

Unit manufacturer shall supply an empty high voltage electrical enclosure of the same size and configuration as that which the unit manufacturer would supply for a factory mounted supply fan variable frequency drive, and it shall be mounted internal of unit casing in the supply fan section. Factory wiring shall be provided from the fan motor to the empty enclosure to facilitate field installation of components. Any installation of field installed electrical devices in this cabinet must be made in accordance with NEC and any local applicable codes. Field installed devices may require inspection and approval by a local code authority.

Unit manufacturer shall supply an empty high voltage electrical enclosure of the same size and configuration as that which the unit manufacturer would supply for a factory mounted supply fan variable frequency drive, and it shall be mounted internal of unit casing in the controls section. Factory wiring shall be provided from the fan motor to the empty enclosure to facilitate field installation of components. Any installation of field installed electrical devices in this cabinet must be made in accordance with NEC and any local applicable codes. Field installed devices may require inspection and approval by a local code authority.

Field Wired Control System

Factory-mounted direct-digital control (DDC) control points shall be engineered, and mounted by the air handler manufacturer to reduce installed costs, improve reliability, and save time at unit startup. The control points as selected by section will require field wiring at the job site. Review unit submittal drawings to verify there is sufficient space for access to control points for field wiring. All factory-mounted controls points shall be covered by the air handler manufacturer's standard warranty.

Fan Details

Unit Size 24UR

Operating Brake Power 7.440 hp

Motor Frequency 59.00 Hz

Altitude 2,150.00 ft

Operating Airflow 7,670 cfm

Design Temp. 70.00 F

Operating Static Pressure 4.014 in H₂O

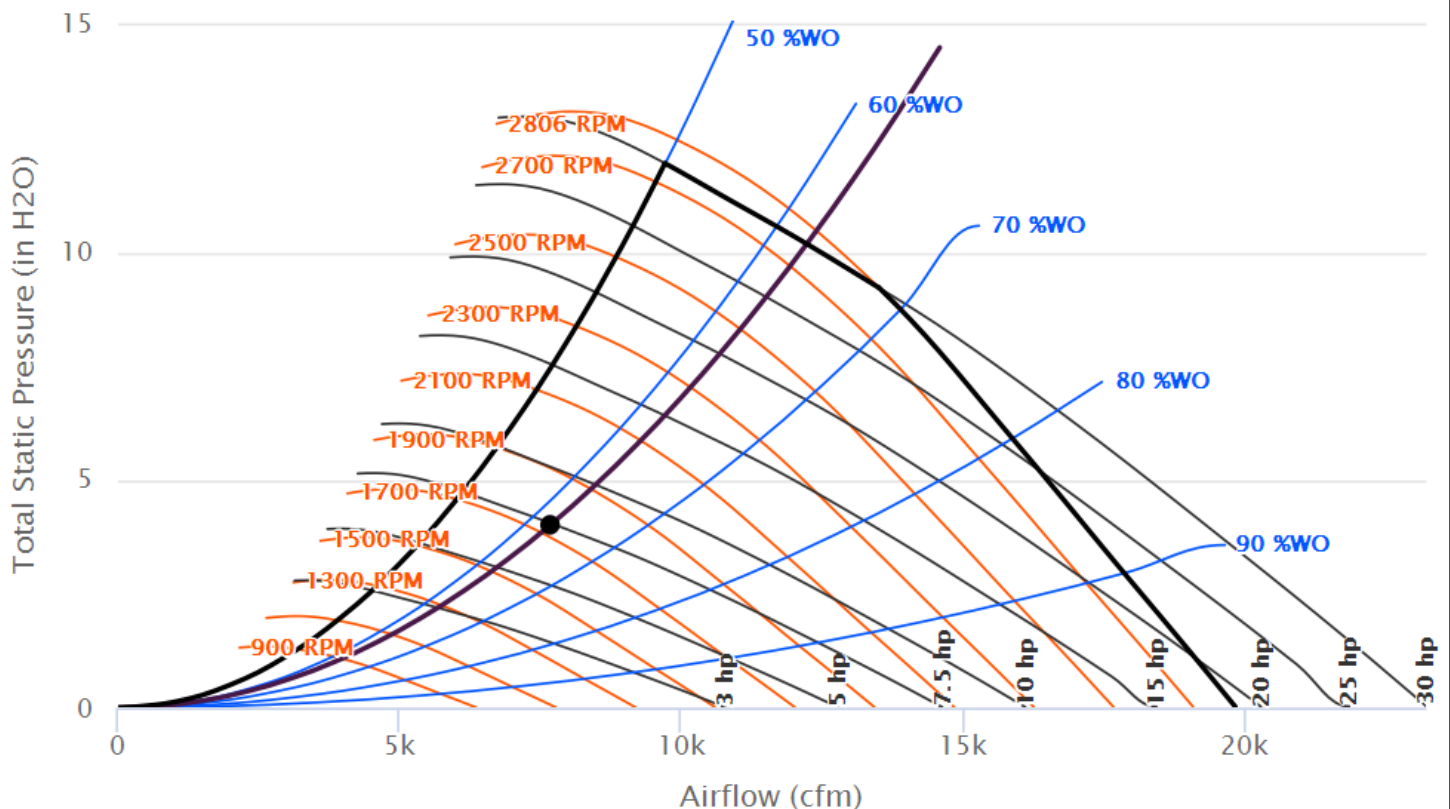
Efficiency 65.24 %

Operating RPM 1,737 rpm

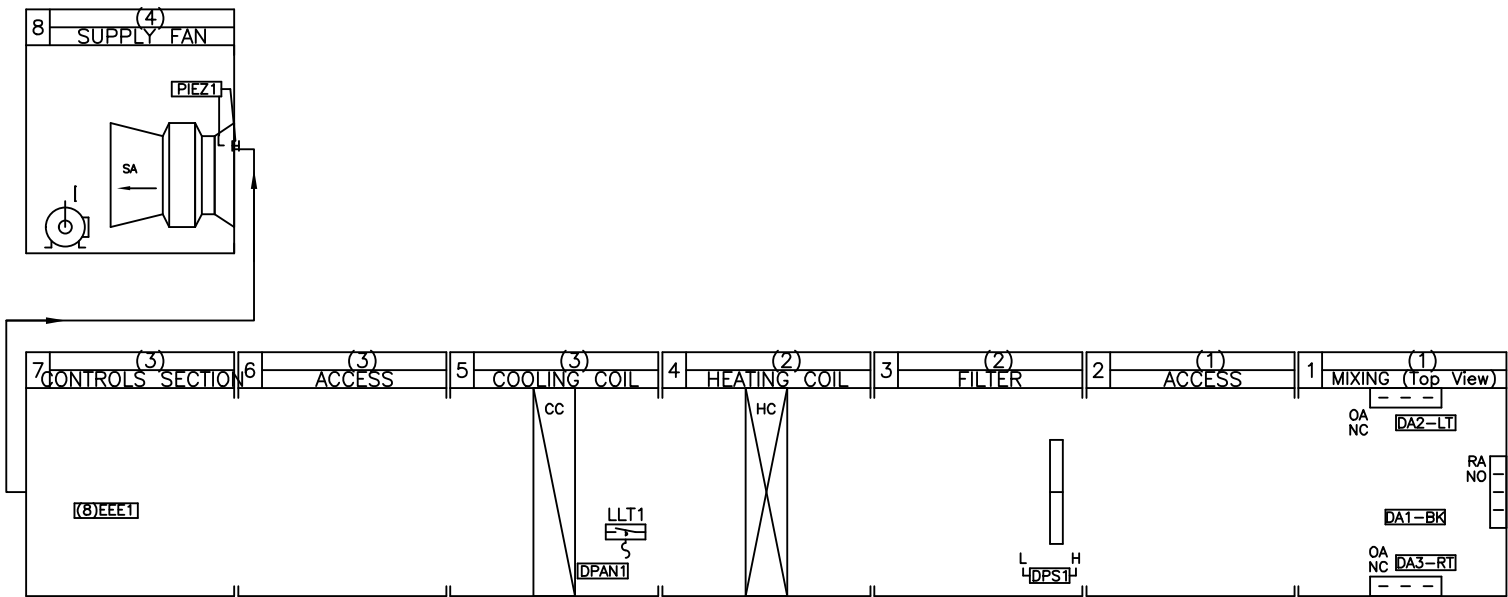
Design VFD frequency is less than line frequency. Ensure the air delivery system can handle being pressurized to the 60 hz operating point on the fan curve.

RTU-1 R3 – Supply – Single Fan

Size 17 DDP 24.5 inch AF H Press 80% Width 9 blades



WIRING DETAIL 1 (OUTDOOR)



DRAWN BY SERVICE ACCOUNT	Trane	CSOA—SCHEMATIC UNIT SIZE: 17 UNIT TAG: RTU-1 R3
DATE 3/6/2024		
SOFTWARE VERSION 1.4.0		
DRAWING VERSION		

LEGEND DETAIL 1
(OUTDOOR)

POS#	BUILD GROUP	DESCRIPTION	LABEL	PWR HR-WIRE	SIGNAL HR-WIRE	XFMR	POWER VA
1	1	Back Damper Actuator	DA1-BK		AO-01		
1		Feedback Damper Actuator	DA1-BK				
1		Left Damper Actuator	DA2-LT		AO-02		
1		Feedback Damper Actuator	DA2-LT				
1		Right Damper Actuator	DA3-RT		AO-03		
1		Feedback Damper Actuator	DA3-RT				
3		Dirty Filter Switch	DPS1				
5		Condensate Overflow Input	DPAN1				
5		Low Limit (Entering)	LLT1	PINK			
8		Low Limit Reset Circuit Relay	2K9				
8		Flow meter	PIEZ1				

DRAWN BY SERVICE ACCOUNT	Trane	
DATE 3/6/2024		
SOFTWARE VERSION 1.4.0		CSOA-SCHMATIC
DRAWING VERSION		UNIT SIZE: 17 UNIT TAG: RTU-1 R3