VC ENGINEERING, LLC
Engineering Consulting

Engineering Report and Calculation Package

Prepared by: VC Engineering, LLC
Email: vcinfio@vceng.biz
Phone: 312-206-2896

REI – RTU Replacement Project

Store No. 0026
279 Salem Street
Reading, MA 01867

November 6, 2022

Table of Contents

VC ENGINEERING, LLC
Engineering Consulting

Briget Wandruff
Dir. of Client Services
Brinco Mechanical Management Services, Inc.
Direct: 516-771-3263
Cell: 516-805-3424

RE: REI Store 0026
Structural Analysis of Roof Structure for Replacement Mechanical Equipment
VC Engineering Project #22193

Dear Ms. Wandruff,

VC Engineering is pleased to present this report of our structural analysis of the existing roof structure to support new replacement mechanical rooftop units on the roof at the store located at the address indicated on the cover page. This report includes a summary of the services we have provided, a discussion of relevant data gathered, calculations and our conclusions regarding the structural capacity of the existing roof structure.

BACKGROUND

Brinco Mechanical indicated to VC Engineering that they intend to remove and replace (7) existing mechanical rooftop units at the address indicated on the cover page. VC Engineering was contacted to perform a structural analysis of the existing roof structural members to support the new loads imposed from the removal and replacement of the rooftop units. Brinco Mechanical has provided all new unit and accessory specifications to VC Engineering for use in our structural analysis.

OBSERVATIONS AND DISCUSSION

VC Engineering performed a site visit to the building to observe the existing structural framing and observed a total of (7) mechanical units on the roof tributary to the building space. Based on email correspondence from Brinco Mechanical, VC Engineering understands that all RTU's are intended to be replaced with new units installed at the same location as the existing units. New RTU's 1-6 will be supported directly on new metal curbs that are mounted to the existing steel roof framing and RTU 7 will be supported by attaching the new unit to the existing curb with a curb adapter. VC Engineering will rely on the accuracy of our field measurements and structural data collected in order to perform our structural analysis.

The roof construction appeared to consist of 1 ½" metal deck spanning to 22" deep steel joists that are supported by W21x44 girders. The W21x44 girders are supported by steel HSS6x6 columns. Refer to the existing framing plan for additional layout information. Supplemental W14x22 beams are located at each side of the RTU's as observed on site. The existing steel roof framing is directly connected to the existing W14x22 at RTU's 1-6. Supplemental L4x4x38 angle framing is located at the underside of the curb at RTU 7. The local governing 2015 International Building Code with local amendments is used to determine the code prescribed loads on the roof structure.

Existing Unit Information			New Unit Information			
RTU	Total Operating Weight (lbs)	Total Max Difference (lbs)	Carrier Model #	Total Operating Weight (lbs)	Curb Adapter Weight (lbs)	Total Weight (lbs)
1	1950	-170	48FCFM16A3M5-3A1F0	1480	300	1780
2	1900	-120	48FCFM16A3M5-3A1F0	1480	300	1780
3	1950	-170	48FCFM16A3M5-3A1F0	1480	300	1780
4	1950	-170	48FCFM16A3M5-3A1F0	1480	300	1780
5	1950	-170	48FCFM16A3M5-3A1F0	1480	300	1780
6	560	447	48FCEA06A3M5-3A1F0	707	300	1007
7	3074	-532	48FCDM24E3M5-3V1C0	2000	542	2542

Reference the table above for new unit information. New Carrier units are proposed to be installed at the same location as the existing units. The operating weights indicated above include all accessories with the unit as provided to VC Engineering in an email correspondence from Brinco Mechanical. New RTU's 1-6 will be supported directly on new metal curbs that are mounted to the existing steel roof framing and RTU 7 will be supported by attaching the new unit to the existing curb with a curb adapter.

CONCLUSION

VC Engineering performed a structural analysis of the existing framing to support the code prescribed loads as well as the loads imposed by the new mechanical units and determined that the existing structural framing is adequate to support the new units. See attached gravity calculations in this report for additional information. This analysis is based on the new units located in the same location as the existing units to be removed.

Please feel free to contact me with any questions.

Sincerely,

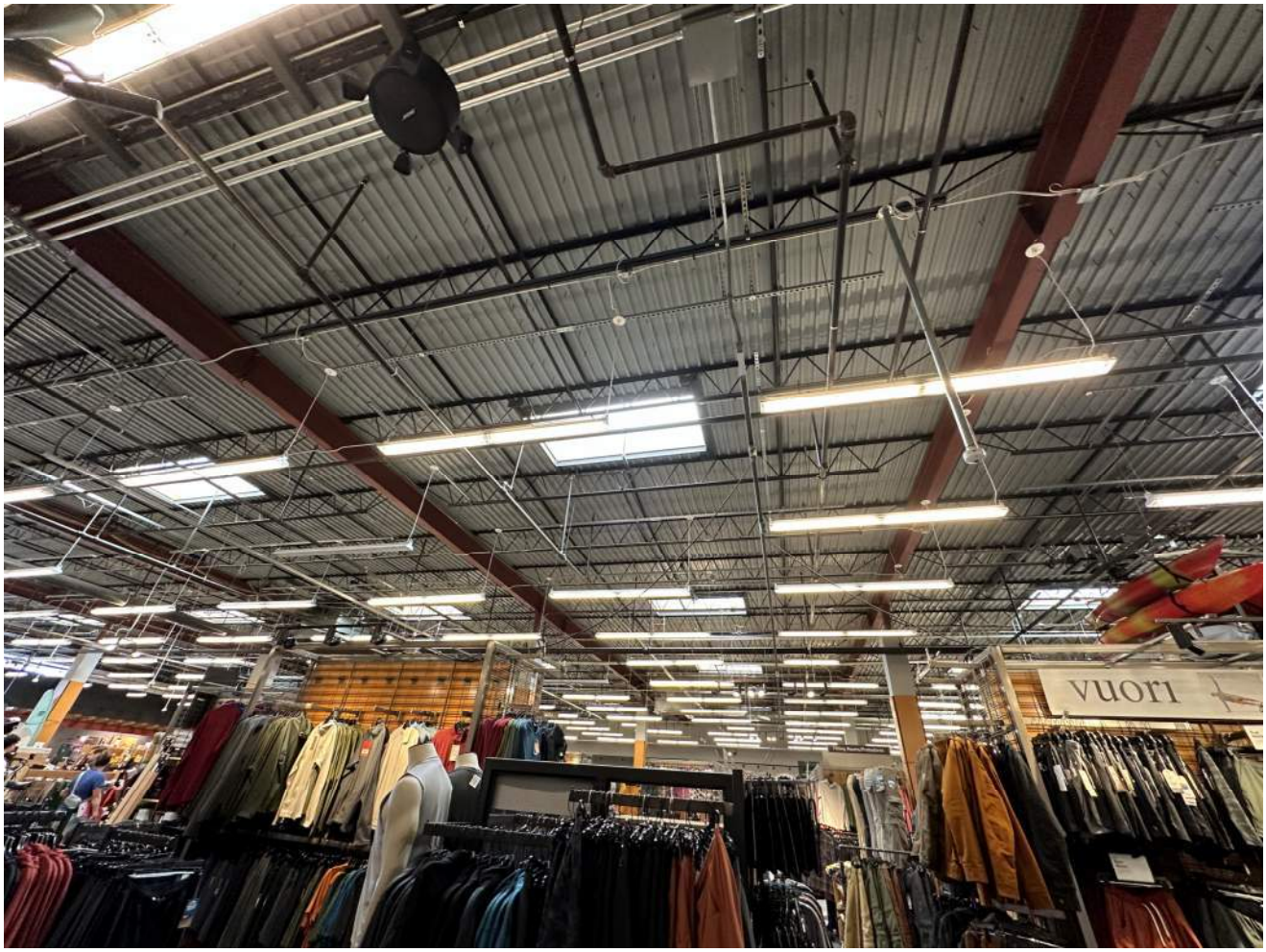
Vito Cinfio

Vito Cinfio P.E. S.E.
VC Engineering, LLC

Vito Cinfio
11/07/2022

Photograph 1 – Aerial view of store via Google Maps

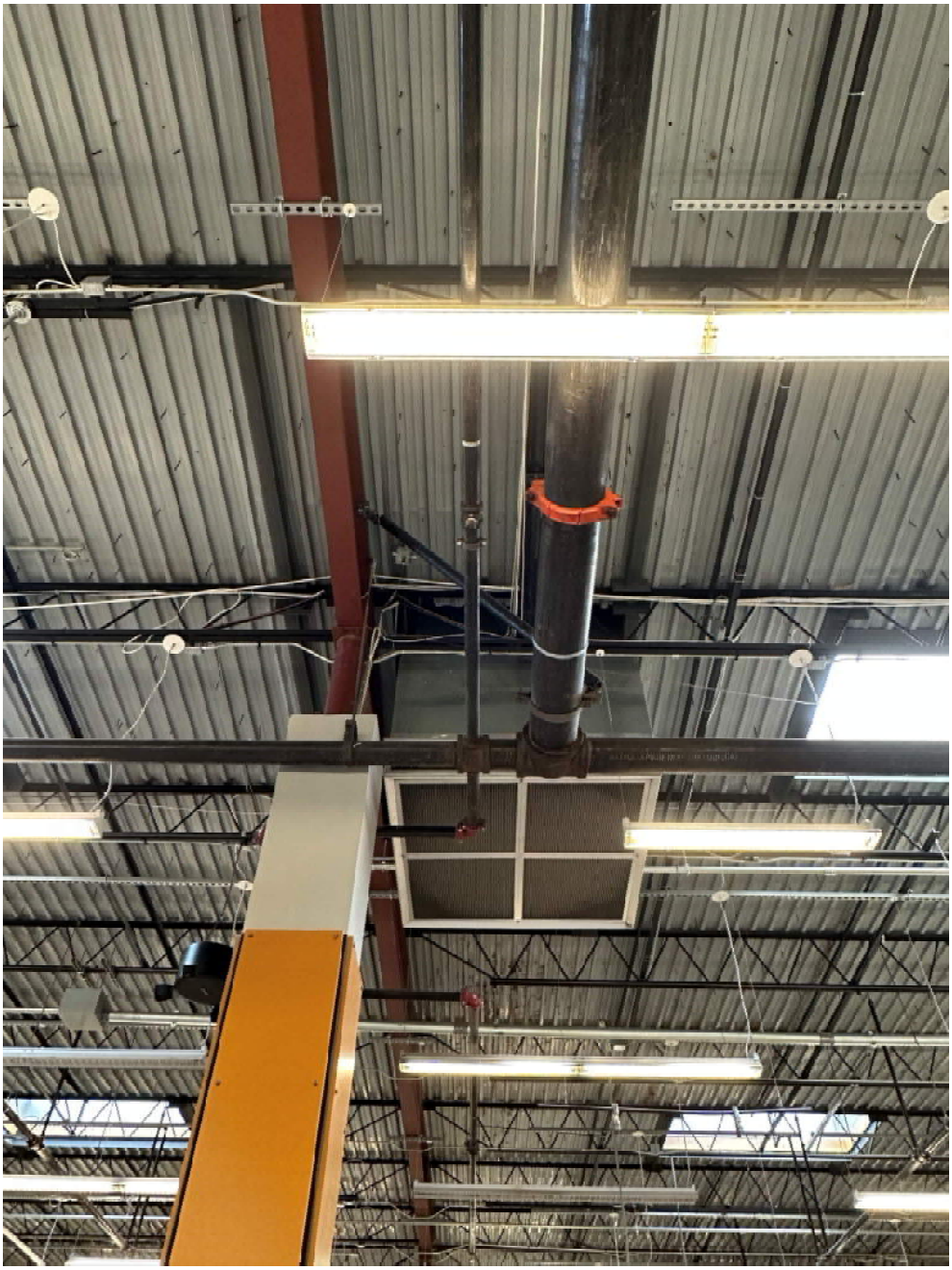
Photograph 2 – Overall view storefront entrance from parking lot



Photograph 3 – Overall view of typical exposed structural framing

Photograph 4 – Overall view of typical exposed structural framing and W14x22 at RTU 1-6

Photograph 5 – Overall view at underside of typical RTU 1-6



Photograph 6 – Overall view at underside of RTU 7

Photograph 7 – RTU 1

Photograph 8 – RTU 2

Photograph 9 – RTU 3

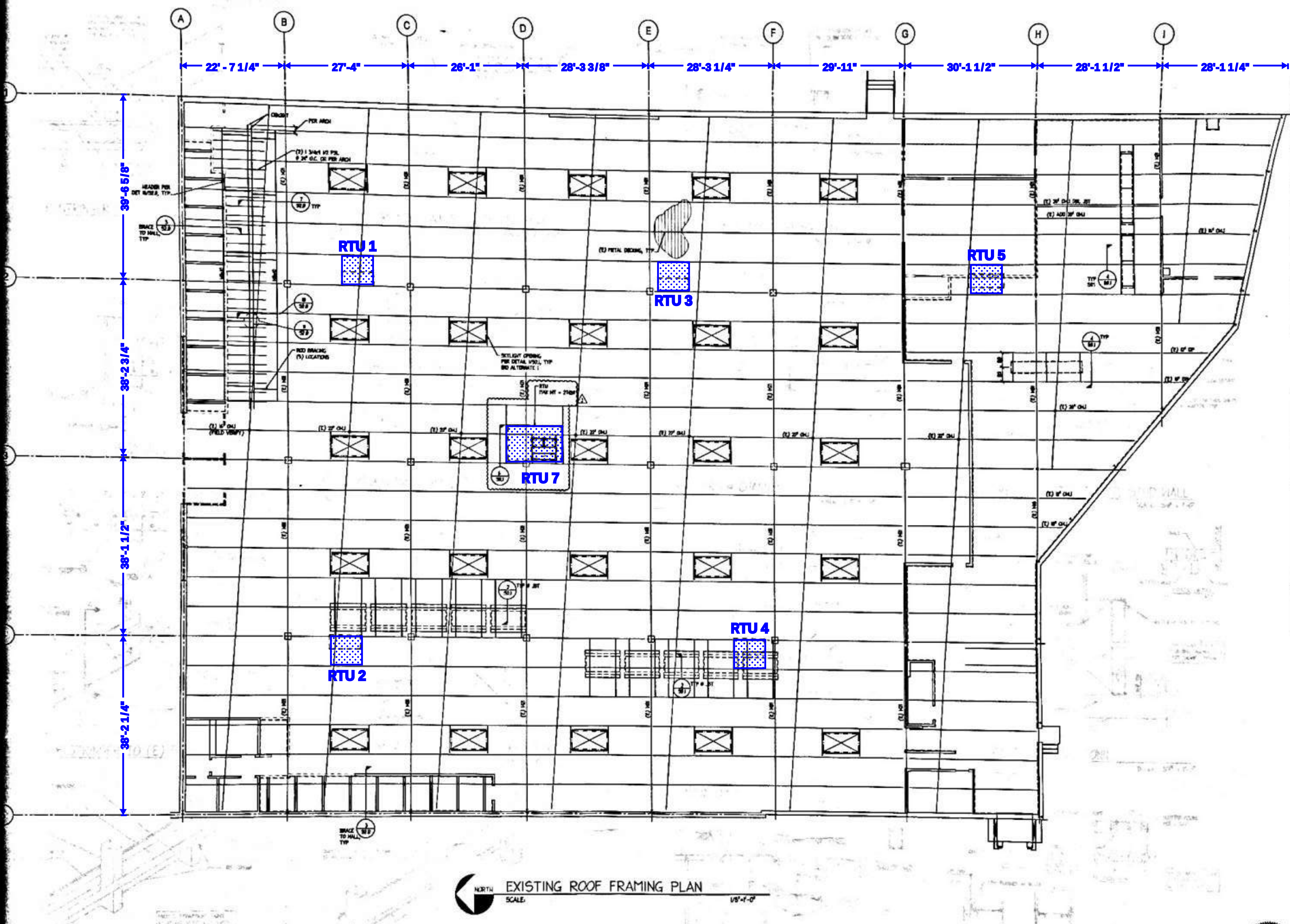
Photograph 10 – RTU 4

Photograph 11 – RTU 5

Photograph 12 – RTU 6

Photograph 13 – RTU 7

Existing Framing Plan



ROBERT F. VANNEY ARCHITECT

READING, 279 SALEM STRE[ET]
INTERIOR PACKA[GE]

REI
www.rei.com

⚠ 12/11/08 REVISION

EXISTING ROOF FRAMING PLAN

NOTE:
THESE DRAWINGS ARE BASED ON A LIMITED AMOUNT OF INFORMATION FOR AN EXISTING BUILDING. CONTRACTOR MUST FIELD VERIFY CONDITIONS AND NOTIFY ARCHITECT AND ENGINEER IF CONDITIONS ARE OTHER THAN AS SHOWN PRIOR TO MODIFICATION.

NOTE:
ALL DIMENSIONS SHOWN ON THESE STRUCTURAL PLANS ARE FOR GENERAL REFERENCE ONLY. THE CONTRACTOR IS RESPONSIBLE FOR VERIFYING ALL DIMENSIONS AND ANY DISCREPANCIES MUST BE BROUGHT TO THE ATTENTION OF THE ARCHITECT AND ENGINEER IMMEDIATELY.

WILLIAM G. ARMOUR STRUCTURAL

ARMOUR UNSDERFER ENGINEERING, INC.

S1

VC ENGINEERING, LLC
Engineering Consulting

Gravity Calculations

Vito Cinfio
11/06/2022

⚠ This is a beta release of the new ATC Hazards by Location website. Please contact us with feedback.

ℹ The ATC Hazards by Location website will not be updated to support ASCE 7-22. Find out why.

Hazards by Location

Search Information

Address: 279 Salem St, Reading, MA 01867, USA

Coordinates: 42.5261793, -71.08614349999999

Elevation: 87 ft

Timestamp: 2022-11-06T15:36:44.106Z

Hazard Type: Snow

ASCE 7-16

Ground Snow Load ⚠ 50 lb/sqft

The reported ground snow load applies at the query location of 87 feet up to a maximum elevation of 500 feet.

ASCE 7-10

Ground Snow Load ⚠ 50 lb/sqft

The reported ground snow load applies at the query location of 87 feet up to a maximum elevation of 500 feet.

ASCE 7-05

Ground Snow Load ⚠ 50 lb/sqft

The reported ground snow load applies at the query location of 87 feet up to a maximum elevation of 500 feet.

The results indicated here DO NOT reflect any state or local amendments to the values or any delineation lines made during the building code adoption process. Users should confirm any output obtained from this tool with the local Authority Having Jurisdiction before proceeding with design.

Please note that the ATC Hazards by Location website will not be updated to support ASCE 7-22. Find out why.

Disclaimer

Hazard loads are interpolated from data provided in ASCE 7 and rounded up to the nearest whole integer.

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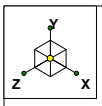
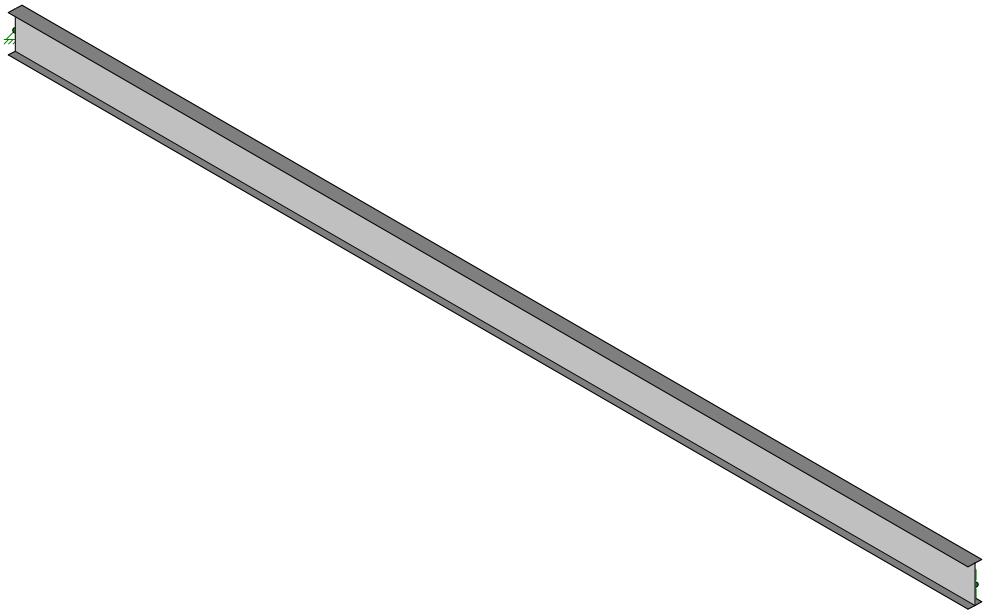
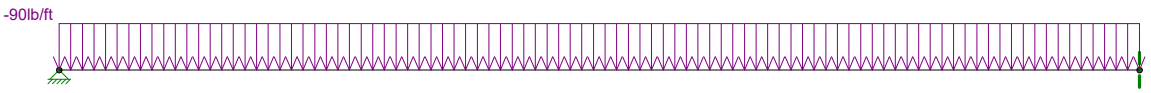


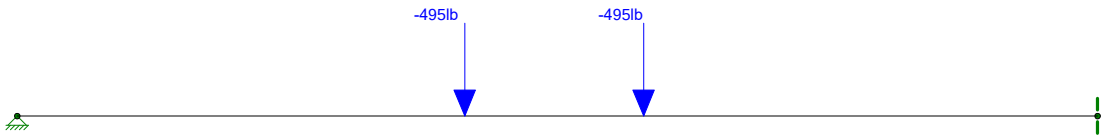


		Nov 6, 2022 at 9:44 AM
	Typical W14x22 Beam Calculation	untitled.r2d



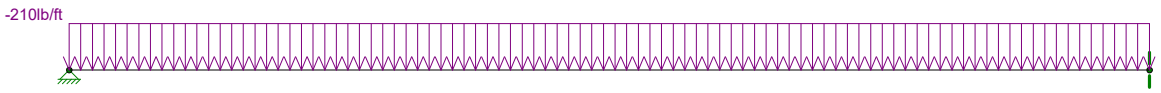
Loads: BLC 2, DLsu

		Nov 6, 2022 at 9:43 AM
	Dead Load Superimposed = 15 psf x 6 ft = 90 plf	untitled.r2d



Loads: BLC 3, DLrtu

		Nov 6, 2022 at 9:42 AM
	Dead Load RTU = 1780+200 / 4 = 495 lb	untitled.r2d

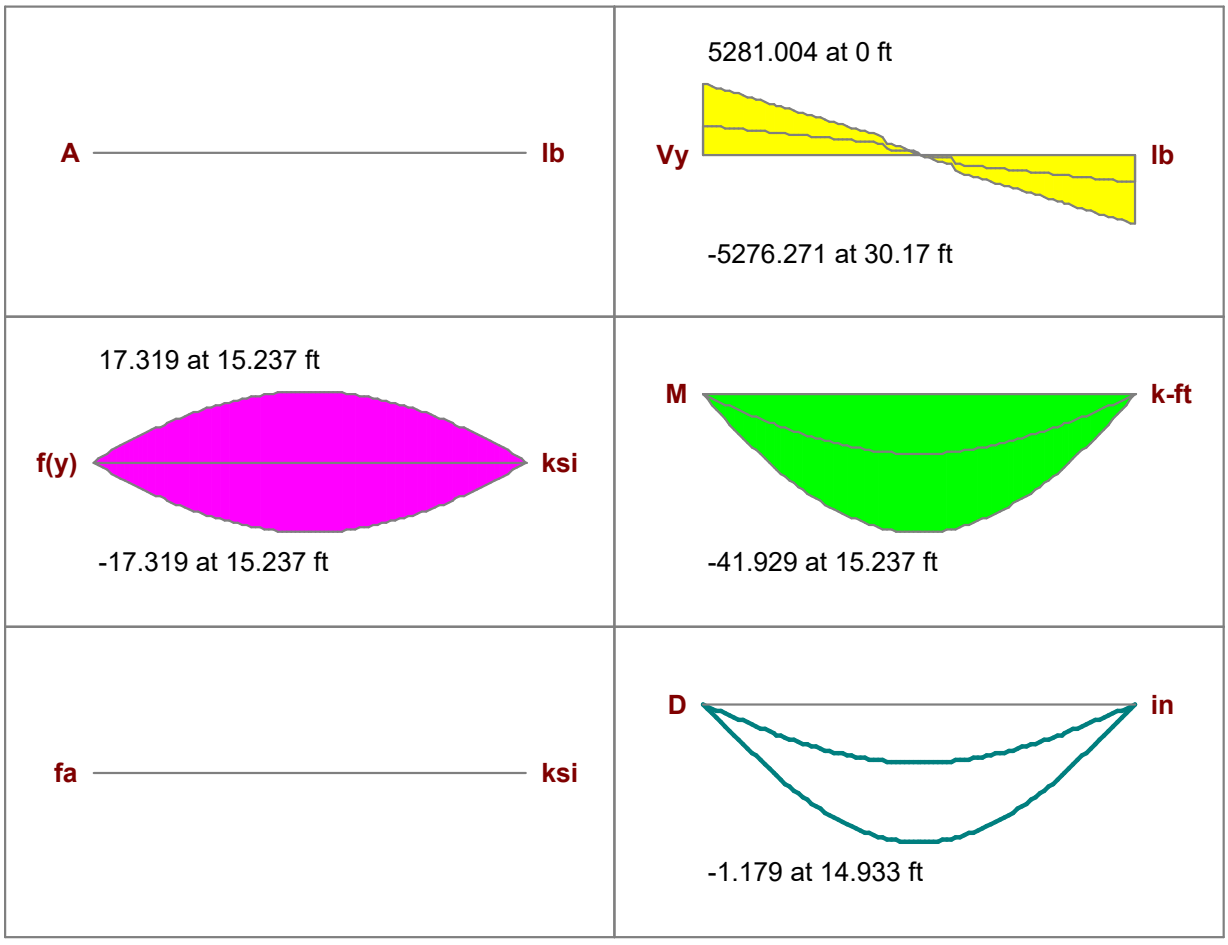


Loads: BLC 4, SL

		Nov 6, 2022 at 9:43 AM
	Snow Load = 50 psf x 0.7 x 6 ft = 210 plf	untitled.r2d

Beam: ***M1***

Shape: **w14X22**
Material: **A36 Gr.36**
Length: **30.17 ft**
I Joint: **N1**
J Joint: **N2**
Envelope
Code Check: **0.703 (LC 2)**
Report Based On 100 Sections



AISC 15th (360-16): ASD Code Check

Max Bending Check	**0.703 (LC 2)**	Max Shear Check	**0.116 (LC 2)**	Max Defl Ratio	**L/307**
Location	**15.237 ft**	Location	**0 ft**	Location	**14.933 ft**
Equation	**H1-1b**			Span	**1**

Bending Flange	**Compact**	Compression Flange	**Non-Slender**	
Bending Web	**Compact**	Compression Web	**Slender**	**Ae=6.49 in2**

			Out Plane	In Plane
Fy	**36 ksi**	Lb	**1 ft**	**1 ft**
Pnc/om	**49812.389 lb**	Lc/r	**11.555**	**2.167**
Pnt/om	**139904.192 lb**			
Mn/om	**59.641 k-ft**	L Comp Flange	**1 ft**	
Vn/om	**45374.4 lb**			
Cb	**1**			

New Unit Specifications

SUBMITTAL

Project

REI - 26 Reading, MA

Date

23 August 2022

Notes:

- Lead time is currently 33 weeks. Lead time is subject to change prior to sale
- RTU 1-5 configuration is Vertical Supply and Horizontal Return
- RTU-6 is Horizontal Supply and Horizontal Return
- RTU-7 is vertical supply and vertical return
- Curb adapter is included for RTU-7
- Curb adapters/curbs have not been provided for RTUs1-6 but may be required, as the new Carrier unit footprints do not match the existing unit footprint
- If curb adapters provided, then assumption made that the existing units sit on the original curbs, it is the buyer's responsibility to verify this validity of this assumption

Table Of Contents

Project: REI - 26 Reading, MA 08-24-2022
Prepared By: 11:31AM

RTU 1-5

Tag Cover Sheet
Unit Report
Certified Drawing
Performance Report

Unit Parameters

Unit Model:..... **48FCFM16A3M5-3A1F0**
Unit Size:..... **16 (15 Tons)**
Volts-Phase-Hertz:..... **230-3-60**
Heating Type:..... **Gas**
Duct Cfg:..... **Vertical Supply / Horizontal Return**
High Heat
Single Circuit, Two Stage Cooling

Dimensions (ft. in.) & Weight (lb.) ***

Unit Length:..... **9' 7.875"**
Unit Width:..... **5' 6.375"**
Unit Height: ..... **4' 9.375"**

*** Weights and Dimensions are approximate. Weight does not include roof curbs, unit packaging, field installed accessories or factory installed options. Approximate dimensions are provided primarily for shipping purposes. For exact dimensions and weights, refer to appropriate product data catalog.

Base Unit Weight (Does not include any accessories):
..... **1480** lb

Lines and Filters

Gas Line Size:..... **3/4**
Condensate Drain Line Size: **3/4**
Return Air Filter Type:..... **Throwaway**
Return Air Filter Quantity:..... **6**
Return Air Filter Size:..... **18 x 24 x 2**

Selection includes construction throwaway filter into the base fan curve. This filter is not MERV Rated.

Unit Configuration

High Static (EcoBlue)
Al/Cu - Al/Cu - Louvered Hail Guards
SystemVu Controls
Unpowered Convenience Outlet
Non-Fused Disconnect and Thru-The-Base Connections
Standard Packaging

Warranty Information

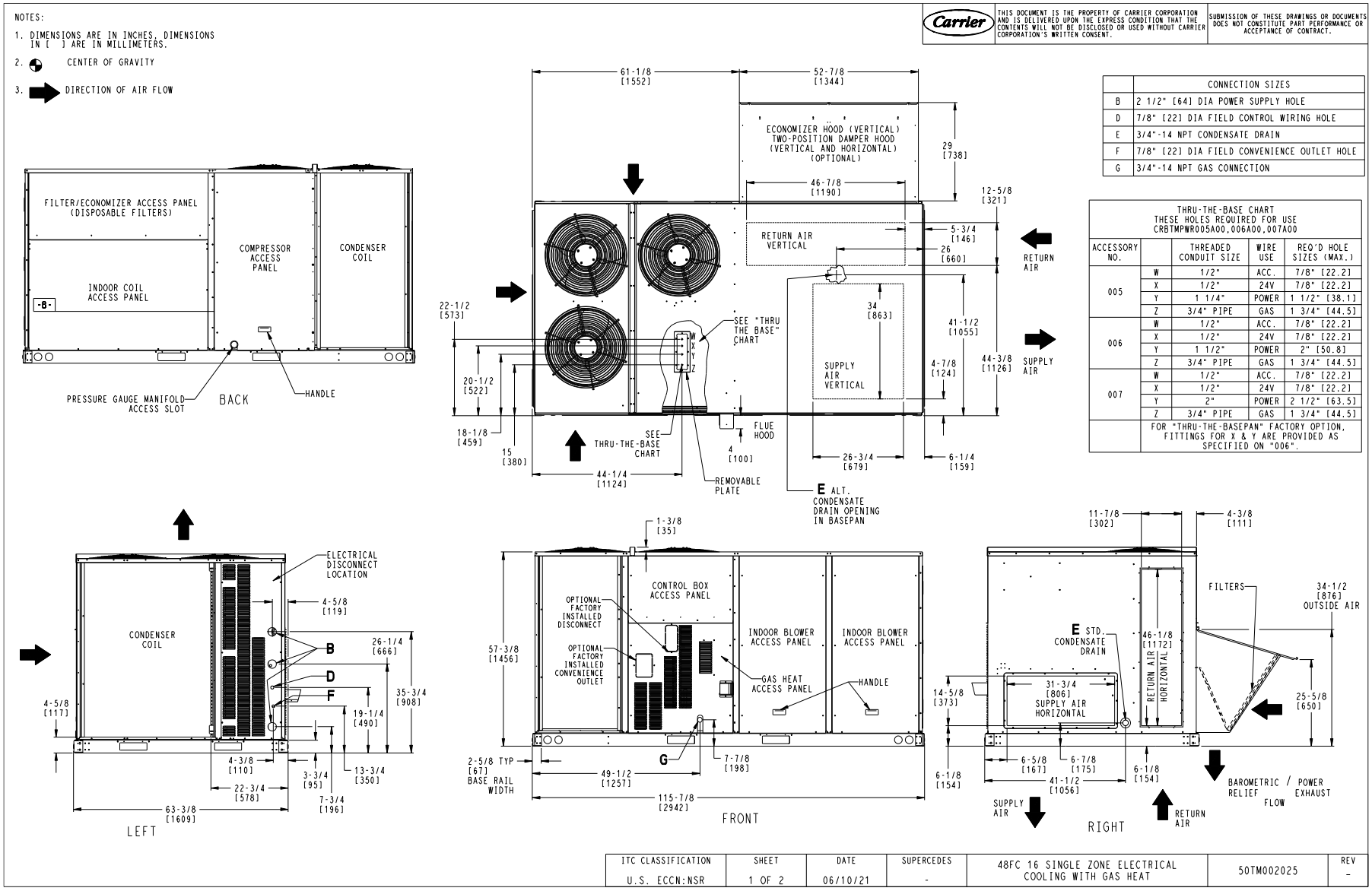
1-Year parts(std.)
5-Year compressor parts(std.)
10-Year heat exchanger - Aluminized(std.)

No optional warranties were selected.

NOTE: Please see Warranty Catalog 500-089 for explanation of policies and ordering methods.

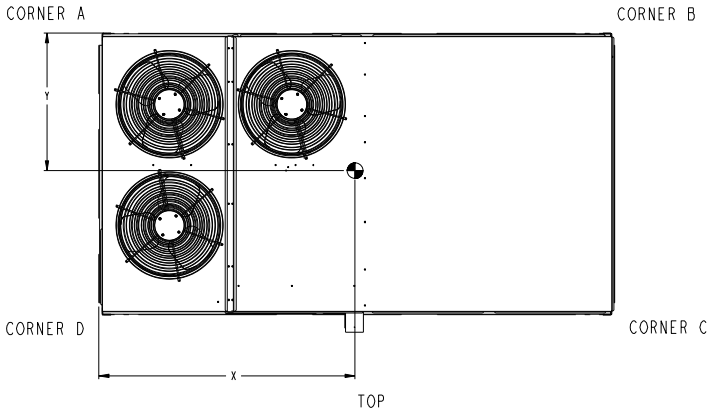
Ordering Information

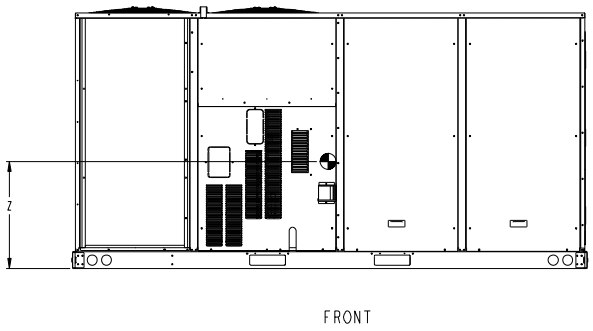
Part Number	Description	Quantity
48FCFM16A3M5-3A1F0	Rooftop Unit	5
Field Installed Accessories		
CRECOMZR088A00	Horizontal EconoMi$er2 - Ultra LOW LEAK design without controller	5
18X24X2-M8-R-P6	18x24x2 MERV-8 replacement air filters	5
CRPWREXH082A00	Horizontal Power Exhaust	5
33ZCSPTCO2LCD-01	CO2/Space Temp. Sensor with LCD DIsplay and No Override	5

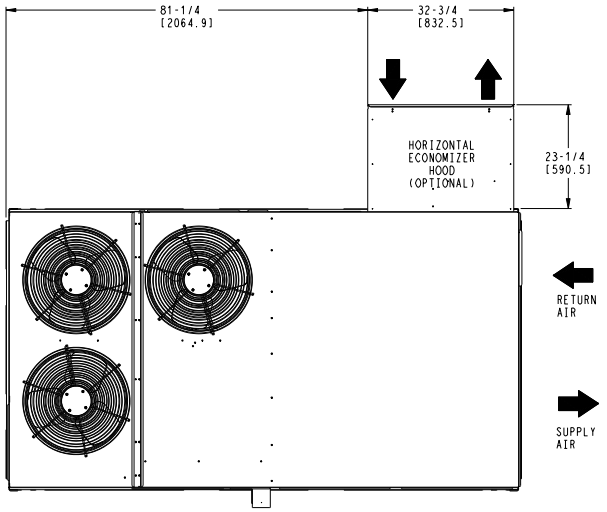

NOTES:
1. DIMENSIONS ARE IN INCHES, DIMENSIONS IN [ ] ARE IN MILLIMETERS.
2. CENTER OF GRAVITY
3. DIRECTION OF AIR FLOW
Carrier
THIS DOCUMENT IS THE PROPERTY OF CARRIER CORPORATION AND IS DELIVERED UPON THE EXPRESS CONDITION THAT THE CONTENTS WILL NOT BE DISCLOSED OR USED WITHOUT CARRIER CORPORATION'S WRITTEN CONSENT.
SUBMISSION OF THESE DRAWINGS OR DOCUMENTS DOES NOT CONSTITUTE PART PERFORMANCE OR ACCEPTANCE OF CONTRACT.
FILTER/ECONOMIZER ACCESS PANEL (DISPOSABLE FILTERS)
COMPRESSOR ACCESS PANEL
CONDENSER COIL
INDOOR COIL ACCESS PANEL
-8-
PRESSURE GAUGE MANIFOLD ACCESS SLOT
BACK
HANDLE
61-1/8 [1552]
52-7/8 [1344]
ECONOMIZER HOOD (VERTICAL) TWO-POSITION DAMPER HOOD (VERTICAL AND HORIZONTAL) (OPTIONAL)
29 [738]
46-7/8 [1190]
12-5/8 [321]
RETURN AIR VERTICAL
5-3/4 [146]
26 [660]
RETURN AIR
22-1/2 [573]
SEE "THRU THE BASE" CHART
34 [863]
41-1/2 [1055]
SUPPLY AIR VERTICAL
4-7/8 [124]
44-3/8 [1126]
SUPPLY AIR
20-1/2 [522]
18-1/8 [459]
15 [380]
SEE THRU-THE-BASE CHART
FLUE HOOD
4 [100]
26-3/4 [679]
6-1/4 [159]
44-1/4 [1124]
REMOVABLE PLATE
E ALT. CONDENSATE DRAIN OPENING IN BASEPAN
CONNECTION SIZES
B 2 1/2" [64] DIA POWER SUPPLY HOLE
D 7/8" [22] DIA FIELD CONTROL WIRING HOLE
E 3/4"-14 NPT CONDENSATE DRAIN
F 7/8" [22] DIA FIELD CONVENIENCE OUTLET HOLE
G 3/4"-14 NPT GAS CONNECTION
THRU-THE-BASE CHART
THESE HOLES REQUIRED FOR USE CRBTMPWR005A00,006A00,007A00
ACCESSORY NO. | | THREADED CONDUIT SIZE | WIRE USE | REQ'D HOLE SIZES (MAX.)
005 | W | 1/2" | ACC. | 7/8" [22.2]
X | 1/2" | 24V | 7/8" [22.2]
Y | 1 1/4" | POWER | 1 1/2" [38.1]
Z | 3/4" PIPE | GAS | 1 3/4" [44.5]
006 | W | 1/2" | ACC. | 7/8" [22.2]
X | 1/2" | 24V | 7/8" [22.2]
Y | 1 1/2" | POWER | 2" [50.8]
Z | 3/4" PIPE | GAS | 1 3/4" [44.5]
007 | W | 1/2" | ACC. | 7/8" [22.2]
X | 1/2" | 24V | 7/8" [22.2]
Y | 2" | POWER | 2 1/2" [63.5]
Z | 3/4" PIPE | GAS | 1 3/4" [44.5]
FOR "THRU-THE-BASEPAN" FACTORY OPTION, FITTINGS FOR X & Y ARE PROVIDED AS SPECIFIED ON "006".
ELECTRICAL DISCONNECT LOCATION
CONDENSER COIL
4-5/8 [119]
26-1/4 [666]
B
D
F
35-3/4 [908]
19-1/4 [490]
4-5/8 [117]
4-3/8 [110]
3-3/4 [95]
13-3/4 [350]
22-3/4 [578]
7-3/4 [196]
63-3/8 [1609]
LEFT
1-3/8 [35]
CONTROL BOX ACCESS PANEL
OPTIONAL FACTORY INSTALLED DISCONNECT
OPTIONAL FACTORY INSTALLED CONVENIENCE OUTLET
INDOOR BLOWER ACCESS PANEL
INDOOR BLOWER ACCESS PANEL
57-3/8 [1456]
GAS HEAT ACCESS PANEL
HANDLE
G
2-5/8 TYP [67] BASE RAIL WIDTH
7-7/8 [198]
49-1/2 [1257]
115-7/8 [2942]
FRONT
11-7/8 [302]
4-3/8 [111]
FILTERS
34-1/2 [876] OUTSIDE AIR
E STD. CONDENSATE DRAIN
46-1/8 [1172] RETURN AIR HORIZONTAL
14-5/8 [373]
31-3/4 [806] SUPPLY AIR HORIZONTAL
25-5/8 [650]
6-1/8 [154]
6-5/8 [167]
6-7/8 [175]
41-1/2 [1056]
6-1/8 [154]
BAROMETRIC / POWER RELIEF
EXHAUST FLOW
SUPPLY AIR
RETURN AIR
RIGHT
ITC CLASSIFICATION: U.S. ECCN:NSR
SHEET: 1 OF 2
DATE: 06/10/21
SUPERCEDES: -
48FC 16 SINGLE ZONE ELECTRICAL COOLING WITH GAS HEAT
50TM002025
REV: -

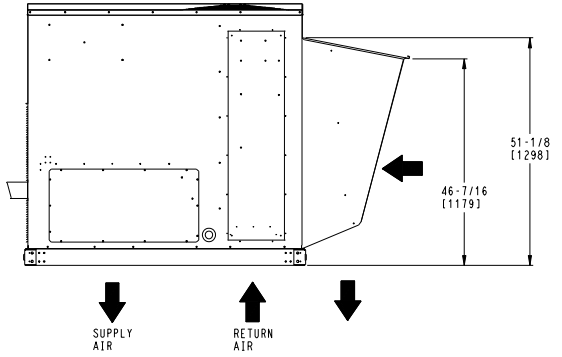
UNIT	STD UNIT WEIGHT		CORNER WEIGHT (A)		CORNER WEIGHT (B)		CORNER WEIGHT (C)		CORNER WEIGHT (D)		C.G.		
	LBS.	KG.	LBS.	KG.	LBS.	KG.	LBS.	KG.	LBS.	KG.	X	Y	Z
48FC-M16	1480	639	373	169	341	155	332	150	362	164	55 3/8 [1407]	31 1/4 [794]	21 1/8 [537]

STANDARD UNIT WEIGHT IS WITH LOW HEAT & WITHOUT PACKAGING.
FOR OPTIONS & ACCESSORIES, REFER TO THE PRODUCT DATA CATALOG.









HORIZONTAL ECONOMIZER

ITC CLASSIFICATION	SHEET	DATE	SUPERCEDES			REV
U.S. ECCN:NSR	2 OF 2	06/10/21	-	48FC 16 SINGLE ZONE ELECTRICAL COOLING WITH GAS HEAT	50TM002025	-

Part Number:48FCFM16A3M5-3A1F0

ARI EER:	**10.80**	
IEER:	**14.5**	

Base Unit Dimensions

Unit Length:	**115.9**	in
Unit Width:	**66.4**	in
Unit Height:	**57.4**	in
Base Unit Weight (Does not include any accessories):	**1480**	lb

Unit

Unit Voltage-Phase-Hertz:	**230-3-60**	
Air Discharge:	**Vertical**	
Fan Drive Type:	**Vane Axial**	
Actual Airflow:	**6000**	CFM
Site Altitude:	**0**	ft

Cooling Performance

Condenser Entering Air DB:	**95.0**	F
Evaporator Entering Air DB:	**80.0**	F
Evaporator Entering Air WB:	**67.0**	F
Entering Air Enthalpy:	**31.44**	BTU/lb
Evaporator Leaving Air DB:	**59.0**	F
Evaporator Leaving Air WB:	**57.4**	F
Evaporator Leaving Air Enthalpy:	**24.66**	BTU/lb
Gross Cooling Capacity:	**183.06**	MBH
Gross Sensible Capacity:	**136.09**	MBH
Compressor Power Input:	**13.50**	kW
Coil Bypass Factor:	**0.093**	

Heating Performance

Heating Airflow:	**6000**	CFM
Entering Air Temp:	**70.0**	F
Leaving Air Temp:	**113.8**	F
Gas Heating Input Capacity:	**280.0 / 350.0**	MBH
Gas Heating Output Capacity:	**224.0 / 284.0**	MBH
Temperature Rise:	**43.8**	F

Supply Fan

External Static Pressure:	**0.50**	in wg
Options / Accessories Static Pressure		
Economizer:	**0.05**	in wg
Power Exhaust:	**(Fan Data Includes Drop)**	
MERV-8 Filter Kit:	**0.12**	in wg
Total Application Static (ESP + Unit Opts/Acc.):	**0.67**	in wg
Fan RPM:	**1766**	
Fan Power:	**2.73**	BHP
NOTE:	**Selected IFM RPM Range: 250 - 2200**	

Selection includes construction throwaway filter into the base fan curve. This filter is not MERV Rated.

Filter pressure drop assumes a clean filter and is intended to be an estimate based on available supplier data. The actual pressure drop the unit experiences may vary due to alternate suppliers or filter loading over time.

Power Exhaust

Return Duct Static:	**0.40**	in wg
Max. Air To Exhaust:	**2850**	CFM

Electrical Data

Voltage Range: ..... **187 - 253**
Compressor #1 RLA: **28.2**
Compressor #1 LRA: **239**
Compressor #2 RLA: **19.6**
Compressor #2 LRA: **136**
Indoor Fan Motor Type: ..... **HIGH**
Indoor Fan Motor FLA: **12.6**
Combustion Fan Motor FLA (ea): **0.48**
Power Supply MCA: **76**
Power Supply MOCP (Fuse or HACR): **100**
Disconnect Size FLA: **79**
Disconnect Size LRA: **409**
Electrical Convenience Outlet: ..... **None**
Power Exhaust [Kit Qty / FLA(ea kit)]: ..... **1 / 3.8**
Outdoor Fan [Qty / FLA (ea)]: ..... **3 / 1.5**

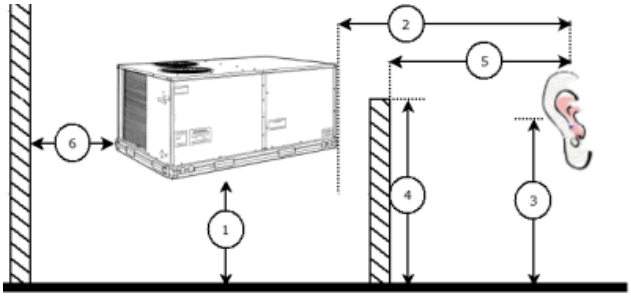
Control Panel SCCR: 5kA RMS at Rated Symmetrical Voltage

Acoustics

Sound Power Levels, db re 10E-12 Watts

	Discharge	Inlet	Outdoor
63 Hz	96.0	92.6	87.0
125 Hz	96.4	86.6	85.2
250 Hz	81.6	66.0	84.6
500 Hz	78.0	67.0	84.9
1000 Hz	72.4	65.0	82.2
2000 Hz	67.6	61.8	78.4
4000 Hz	74.0	62.5	75.3
8000 Hz	72.4	59.7	72.9
A-Weighted	83.7	74.2	87.0

Advanced Acoustics



Advanced Accoustics Parameters

1. Unit height above ground: ..... **30.0** ft
2. Horizontal distance from unit to receiver: ..... **50.0** ft
3. Receiver height above ground: ..... **5.7** ft
4. Height of obstruction: ..... **0.0** ft
5. Horizontal distance from obstruction to receiver: . **0.0** ft
6. Horizontal distance from unit to obstruction: ..... **0.0** ft

Detailed Acoustics Information

Performance Summary For RTU 1-5

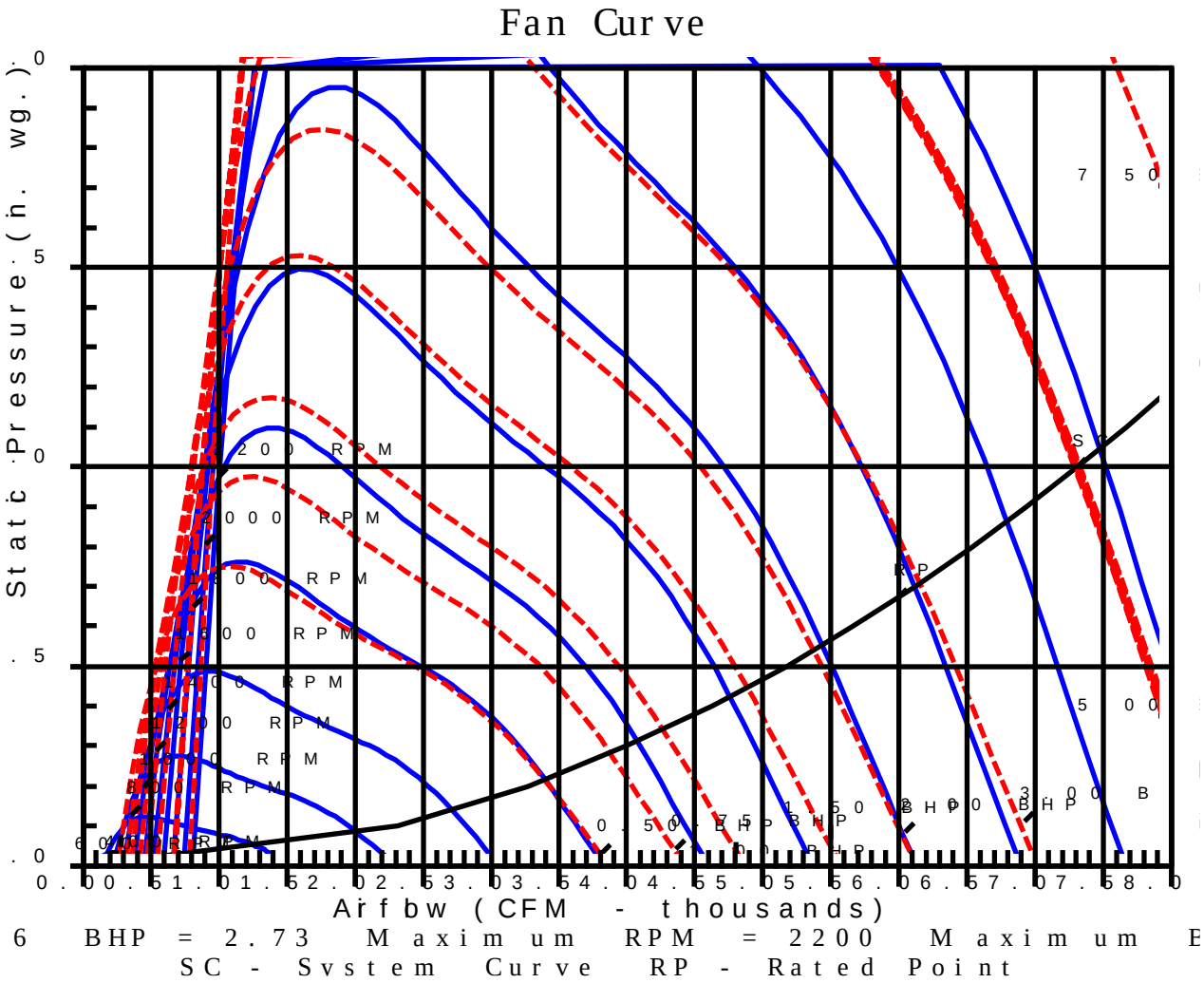
Project: REI - 26 Reading, MA
Prepared By:

08-24-2022
11:31AM

Octave Band Center Freq. Hz	63	125	250	500	1k	2k	4k	8k	Overall
A	87.0	85.2	84.6	84.9	82.2	78.4	75.3	72.9	92.4 Lw
B	60.8	69.1	76.0	81.7	82.2	79.6	76.3	71.8	87.1 LwA
C	54.6	52.8	52.2	52.5	49.8	46.0	42.9	40.5	60.0 Lp
D	28.4	36.7	43.6	49.3	49.8	47.2	43.9	39.4	54.7 LpA

Legend
A Sound Power Levels at Unit's Acoustic Center, Lw
B A-Weighted Sound Power Levels at Unit's Acoustic Center, LwA
C Sound Pressure Levels at Specific Distance from Unit, Lp
D A-Weighted Sound Pressure Levels at Specific Distance from Unit, LpA

Calculation methods used in this program are patterned after the ASHRAE Guide; other ASHRAE Publications and the AHRI Acoustical Standards. While a very significant effort has been made to insure the technical accuracy of this program, it is assumed that the user is knowledgeable in the art of system sound estimation and is aware of the tolerances involved in real world acoustical estimation. This program makes certain assumptions as to the dominant sound sources and sound paths which may not always be appropriate to the real system being estimated. Because of this, no assurances can be offered that this software will always generate an accurate sound prediction from user supplied input data. If in doubt about the estimation of expected sound levels in a space, an Acoustical Engineer or a person with sound prediction expertise should be consulted.



RTU-6

Tag Cover Sheet
Unit Report
Certified Drawing
Performance Report

Unit Report For RTU-6

Project: REI - 26 Reading, MA
Prepared By:

08-24-2022
11:31AM

Unit Parameters

Unit Model: **48FCEA06A3M5-3A1F0**
Unit Size: ..... **06 (5 Tons)**
Volts-Phase-Hertz: **230-3-60**
Heating Type: ..... **Gas**
Duct Cfg: ... **Horizontal Supply / Horizontal Return**
Medium Heat
Standard One Stage Cooling Models

Dimensions (ft. in.) & Weight (lb.) ***

Unit Length: ..... **6' 2.375"**
Unit Width: ..... **3' 10.625"**
Unit Height: ..... **2' 9.375"**
*** **Total Operating Weight:** ..... **707** lb

*** Weights and Dimensions are approximate. Weight does not include unit packaging. Approximate dimensions are provided primarily for shipping purposes. For exact dimensions and weights, refer to appropriate product data catalog.

Lines and Filters

Gas Line Size: **1/2**
Condensate Drain Line Size: **3/4**
Return Air Filter Type: ..... **Throwaway**
Return Air Filter Quantity: **2**
Return Air Filter Size: ..... **16 x 25 x 2**

Selection includes construction throwaway filter into the base fan curve. This filter is not MERV Rated.

Unit Configuration

Direct Drive - EcoBlue - High Static
Al/Cu - Al/Cu - Louvered Hail Guards
SystemVu Controls
Unpowered Convenience Outlet
Non-Fused Disconnect and Thru-The-Base Connections
Standard Packaging

Warranty Information

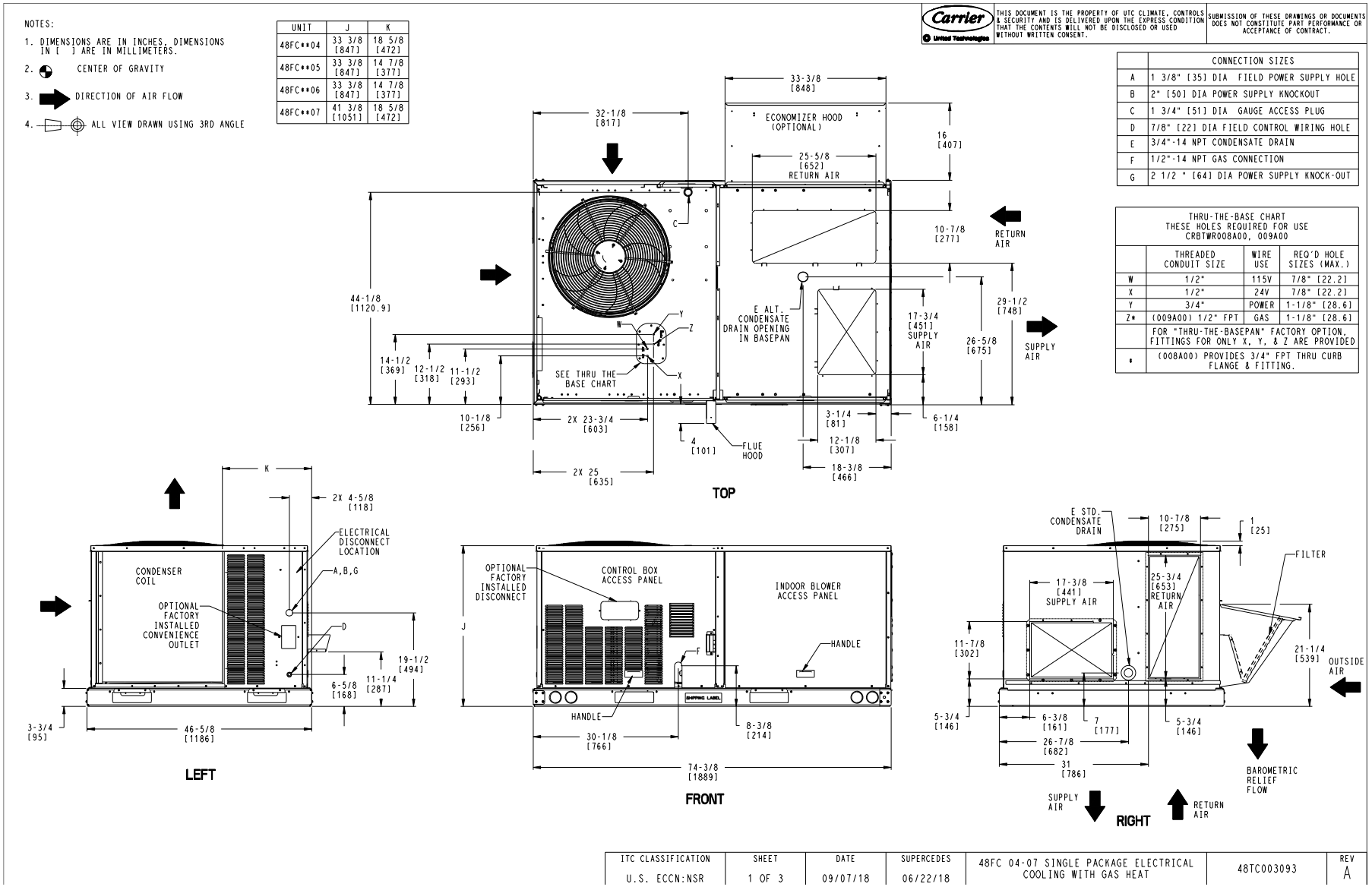
1-Year parts(std.)
5-Year compressor parts(std.)
10-Year heat exchanger - Aluminized(std.)

No optional warranties were selected.

NOTE: Please see Warranty Catalog 500-089 for explanation of policies and ordering methods.

Ordering Information

Part Number	Description	Quantity
48FCEA06A3M5-3A1F0	Rooftop Unit	1
Field Installed Accessories		
CRECOMZR026A00	Horizontal EconoMi$er2 - Standard Low Leak design without controller	1
33ZCSPTCO2LCD-01	CO2/Space Temp. Sensor with LCD DIsplay and No Override	1
16X25X2-M8-R-P2	16x25x2 MERV-8 replacement air filters	1
CRPWREXH028A01	Horizontal Power Exhaust	1


NOTES:
1. DIMENSIONS ARE IN INCHES. DIMENSIONS IN [ ] ARE IN MILLIMETERS.
2. CENTER OF GRAVITY
3. DIRECTION OF AIR FLOW
4. ALL VIEW DRAWN USING 3RD ANGLE
UNIT | J | K
48FC**04 | 33 3/8 [847] | 18 5/8 [472]
48FC**05 | 33 3/8 [847] | 14 7/8 [377]
48FC**06 | 33 3/8 [847] | 14 7/8 [377]
48FC**07 | 41 3/8 [1051] | 18 5/8 [472]
Carrier
United Technologies
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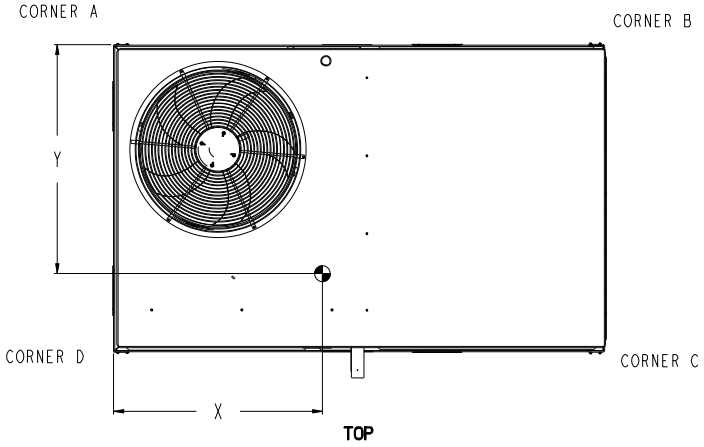
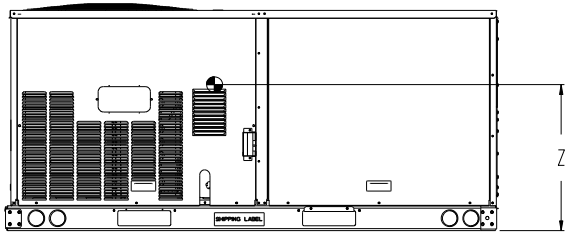
SUBMISSION OF THESE DRAWINGS OR DOCUMENTS DOES NOT CONSTITUTE PART PERFORMANCE OR ACCEPTANCE OF CONTRACT.
CONNECTION SIZES
A | 1 3/8" [35] DIA FIELD POWER SUPPLY HOLE
B | 2" [50] DIA POWER SUPPLY KNOCKOUT
C | 1 3/4" [51] DIA GAUGE ACCESS PLUG
D | 7/8" [22] DIA FIELD CONTROL WIRING HOLE
E | 3/4"-14 NPT CONDENSATE DRAIN
F | 1/2"-14 NPT GAS CONNECTION
G | 2 1/2 " [64] DIA POWER SUPPLY KNOCK-OUT
THRU-THE-BASE CHART
THESE HOLES REQUIRED FOR USE CRBTWR008A00, 009A00
THREADED CONDUIT SIZE | WIRE USE | REQ'D HOLE SIZES (MAX.)
W | 1/2" | 115V | 7/8" [22.2]
X | 1/2" | 24V | 7/8" [22.2]
Y | 3/4" | POWER | 1-1/8" [28.6]
Z* | (009A00) 1/2" FPT | GAS | 1-1/8" [28.6]
FOR "THRU-THE-BASEPAN" FACTORY OPTION, FITTINGS FOR ONLY X, Y, & Z ARE PROVIDED
* (008A00) PROVIDES 3/4" FPT THRU CURB FLANGE & FITTING.
33-3/8 [848]
32-1/8 [817]
ECONOMIZER HOOD (OPTIONAL)
16 [407]
25-5/8 [652] RETURN AIR
10-7/8 [277]
RETURN AIR
44-1/8 [1120.9]
E ALT. CONDENSATE DRAIN OPENING IN BASEPAN
17-3/4 [451] SUPPLY AIR
29-1/2 [748]
26-5/8 [675]
SUPPLY AIR
14-1/2 [369]
12-1/2 [318]
11-1/2 [293]
SEE THRU THE BASE CHART
10-1/8 [256]
2X 23-3/4 [603]
3-1/4 [81]
6-1/4 [158]
4 [101]
FLUE HOOD
12-1/8 [307]
2X 25 [635]
18-3/8 [466]
TOP
K
2X 4-5/8 [118]
ELECTRICAL DISCONNECT LOCATION
CONDENSER COIL
A,B,G
OPTIONAL FACTORY INSTALLED CONVENIENCE OUTLET
D
19-1/2 [494]
6-5/8 [168]
11-1/4 [287]
3-3/4 [95]
46-5/8 [1186]
LEFT
OPTIONAL FACTORY INSTALLED DISCONNECT
CONTROL BOX ACCESS PANEL
INDOOR BLOWER ACCESS PANEL
J
F
HANDLE
HANDLE
8-3/8 [214]
30-1/8 [766]
74-3/8 [1889]
FRONT
E STD. CONDENSATE DRAIN
10-7/8 [275]
1 [25]
FILTER
17-3/8 [441] SUPPLY AIR
25-3/4 [653] RETURN AIR
11-7/8 [302]
21-1/4 [539]
OUTSIDE AIR
5-3/4 [146]
6-3/8 [161]
7 [177]
5-3/4 [146]
26-7/8 [682]
31 [786]
BAROMETRIC RELIEF FLOW
SUPPLY AIR
RETURN AIR
RIGHT
ITC CLASSIFICATION: U.S. ECCN:NSR
SHEET: 1 OF 3
DATE: 09/07/18
SUPERCEDES: 06/22/18
48FC 04-07 SINGLE PACKAGE ELECTRICAL COOLING WITH GAS HEAT
48TC003093
REV: A

UNIT	STD. UNIT WEIGHT *		CORNER WEIGHT (A)		CORNER WEIGHT (B)		CORNER WEIGHT (C)		CORNER WEIGHT (D)		C.G.		HEIGHT
	LBS.	KG.	LBS.	KG.	LBS.	KG.	LBS.	KG.	LBS.	KG.	X	Y	Z
48FC**04	482	219	113	51	116	53	128	58	125	57	37 5/8 [956]	24 9/16 [624]	18 1/4 [464]
48FC**05	543	246	138	63	133	60	133	60	138	63	36 1/2 [927]	23 3/8 [594]	18 [457]
48FC**06	556	252	142	64	136	62	136	62	142	64	36 1/2 [927]	23 3/8 [594]	18 [457]
48FC**07	607	275	162	73	152	69	141	64	151	68	36 [914]	22 1/2 [572]	19 3/8 [492]

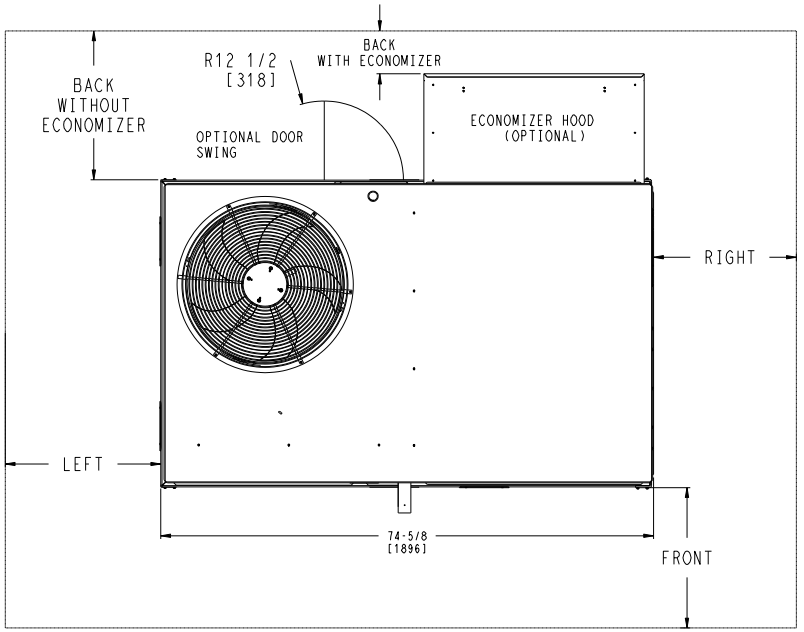
* STANDARD UNIT WEIGHT IS WITH LOW GAS HEAT AND WITHOUT PACKAGING.
FOR OTHER OPTIONS AND ACCESSORIES, REFER TO THE PRODUCT DATA CATALOG.



TOP



FRONT

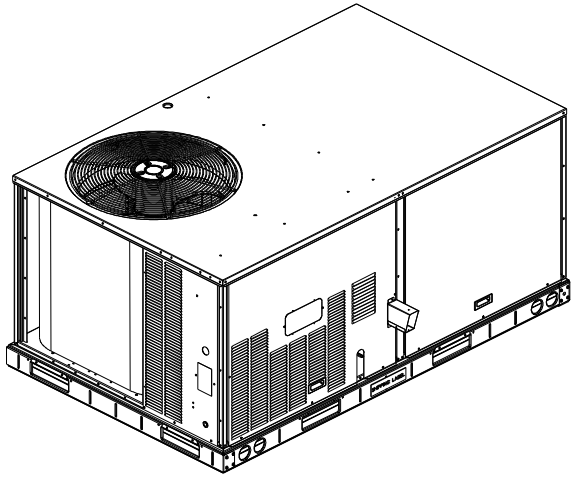


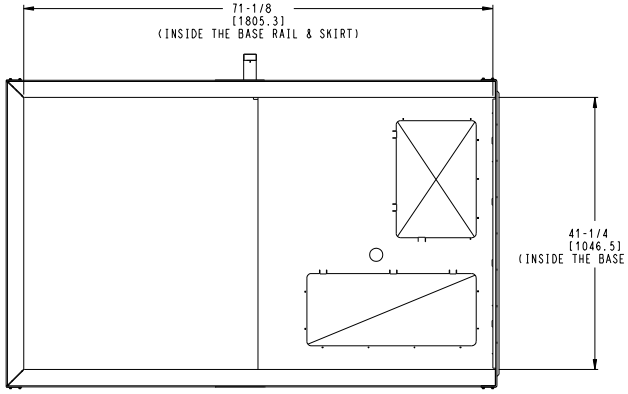
NOTES:

1. FOR ALL MINIMUM CLEARANCES LOCAL CODES OR JURISDICTIONS MAY PREVAIL.

	CLEARANCE		
	SERVICE WITH:	SERVICE WITH:	OPERATING
SURFACE	CONDUCTIVE BARRIER	NONCONDUCTIVE BARRIER	CLEARANCE
FRONT	48 [1219mm]	36 [914mm]	18 [457mm]
LEFT	48 [1219mm]	42 [1067mm]	18 [457mm]
BACK	48 [1219mm]	42 [1067mm]	18 [457mm]
BACK W/HOOD	36 [914mm]	36 [914mm]	18 [457mm]
RIGHT	36 [914mm]	36 [914mm]	18 [457mm]
TOP	72 [1829mm]	72 [1829mm]	72 [1829mm]

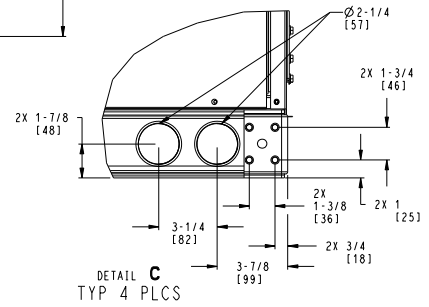
ITC CLASSIFICATION	SHEET	DATE	SUPERCEDES			REV
U.S. ECCN:NSR	2 OF 3	09/07/18	06/22/18	48FC 04-07 SINGLE PACKAGE ELECTRICAL COOLING WITH GAS HEAT	48TC003093	A



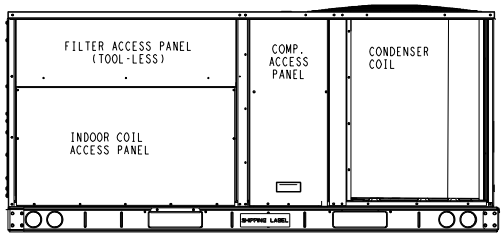


INSIDE BASERAIL DIMENSIONS

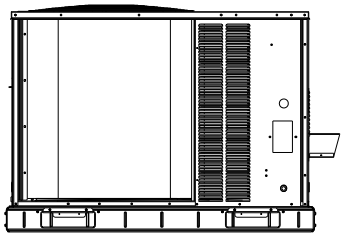
BOTTOM



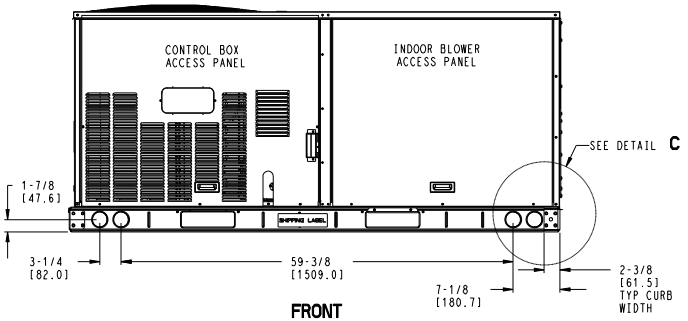
DETAIL **C**
TYP 4 PLCS



BACK



LEFT



FRONT

ITC CLASSIFICATION	SHEET	DATE	SUPERCEDES			REV
U.S. ECCN:NSR	3 OF 3	09/07/18	06/22/18	48FC 04-07 SINGLE PACKAGE ELECTRICAL COOLING WITH GAS HEAT	48TC003093	A

Part Number:48FCEA06A3M5-3A1F0

ARI SEER:	**14.00**	
Base Unit Dimensions		
Unit Length:	**74.4**	in
Unit Width:	**46.6**	in
Unit Height:	**33.4**	in
Operating Weight		
Base Unit Weight:	**511**	lb
Medium Heat:	**63**	lb
Direct Drive - EcoBlue - High Static:	**5**	lb
Al/Cu - Al/Cu - Louvered Hail Guards:	**13**	lb
SystemVu Controls:	**2**	lb
Unpowered Convenience Outlet:	**4**	lb
Non-Fused Disconnect and Thru-The-Base Connections:	**9**	lb
Accessories		
Horizontal EconoMi$er2 - Standard Low Leak design without controller:	**70**	lb
Horizontal Power Exhaust:	**30**	lb
Total Operating Weight:	**707**	lb
Unit		
Unit Voltage-Phase-Hertz:	**230-3-60**	
Air Discharge:	**Horizontal**	
Fan Drive Type:	**Vane Axial**	
Actual Airflow:	**2000**	CFM
Site Altitude:	**0**	ft
Cooling Performance		
Condenser Entering Air DB:	**95.0**	F
Evaporator Entering Air DB:	**80.0**	F
Evaporator Entering Air WB:	**67.0**	F
Entering Air Enthalpy:	**31.44**	BTU/lb
Evaporator Leaving Air DB:	**59.3**	F
Evaporator Leaving Air WB:	**57.7**	F
Evaporator Leaving Air Enthalpy:	**24.85**	BTU/lb
Gross Cooling Capacity:	**59.31**	MBH
Gross Sensible Capacity:	**44.73**	MBH
Compressor Power Input:	**4.14**	kW
Coil Bypass Factor:	**0.163**	
Heating Performance		
Heating Airflow:	**2000**	CFM
Entering Air Temp:	**70.0**	F
Leaving Air Temp:	**110.7**	F
Gas Heating Input Capacity:	**110.0**	MBH
Gas Heating Output Capacity:	**88.0**	MBH
Temperature Rise:	**40.7**	F
Thermal Efficiency (%):	**80.0**	
Supply Fan		
External Static Pressure:	**0.50**	in wg
Options / Accessories Static Pressure		
Economizer:	**0.12**	in wg
Power Exhaust:	**(Fan Data Includes Drop)**	
MERV-8 Filter Kit:	**0.14**	in wg
Total Application Static (ESP + Unit Opts/Acc.):	**0.76**	in wg
Fan RPM:	**2155**	
Fan Power:	**1.07**	BHP

NOTE: ..... **Selected IFM RPM Range: 1420 - 2836**

Selection includes construction throwaway filter into the base fan curve. This filter is not MERV Rated.

Filter pressure drop assumes a clean filter and is intended to be an estimate based on available supplier data. The actual pressure drop the unit experiences may vary due to alternate suppliers or filter loading over time.

Power Exhaust

Return Duct Static: ..... **0.40** in wg
Max. Air To Exhaust: ..... **1300** CFM

Electrical Data

Voltage Range: ..... **187 - 253**
Compressor #1 RLA: **16**
Compressor #1 LRA: **110**
Indoor Fan Motor Type: ..... **HIGH**
Indoor Fan Motor FLA: **6.4**
Combustion Fan Motor FLA (ea): **0.48**
Power Supply MCA: **30**
Power Supply MOCP (Fuse or HACR): **45**
Disconnect Size FLA: **30**
Disconnect Size LRA: **125**
Electrical Convenience Outlet: ..... **None**
Power Exhaust [Kit Qty / FLA(ea kit)]: ..... **1 / 1.9**
Outdoor Fan [Qty / FLA (ea)]: ..... **1 / 1.5**

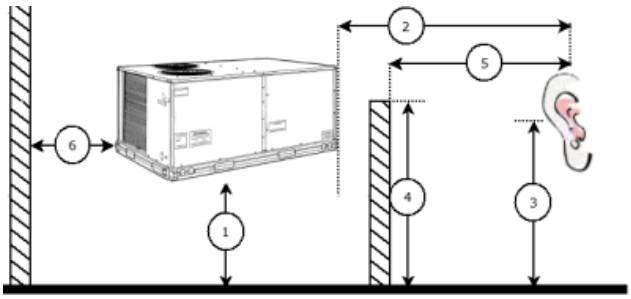
Control Panel SCCR: 5kA RMS at Rated Symmetrical Voltage

Acoustics

Sound Power Levels, db re 10E-12 Watts

	Discharge	Inlet	Outdoor
63 Hz	93.2	90.0	85.6
125 Hz	84.6	80.4	84.7
250 Hz	78.6	72.5	80.5
500 Hz	74.9	67.3	76.0
1000 Hz	71.8	69.2	72.4
2000 Hz	69.2	60.6	68.0
4000 Hz	65.1	53.8	62.8
8000 Hz	60.8	47.9	59.3
A-Weighted	78.3	73.1	79.0

Advanced Acoustics



Advanced Accoustics Parameters

1. Unit height above ground: ..... **30.0** ft

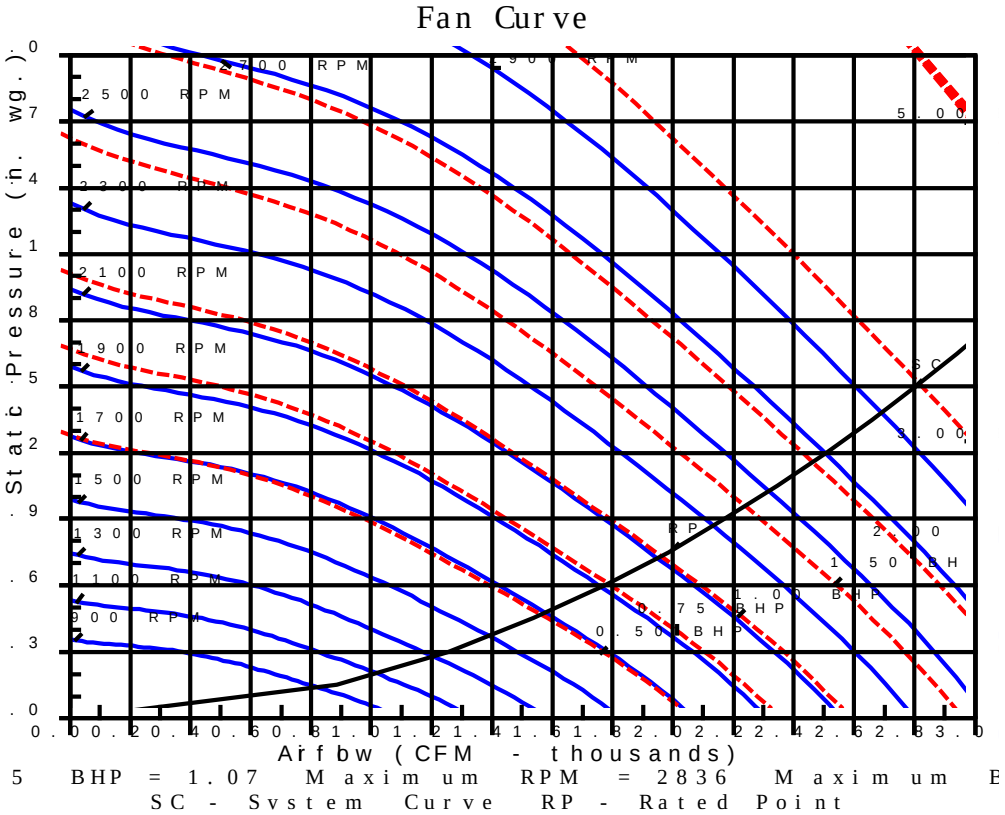
2. Horizontal distance from unit to receiver: .....**50.0** ft
3. Receiver height above ground: .....**5.7** ft
4. Height of obstruction: .....**0.0** ft
5. Horizontal distance from obstruction to receiver: .**0.0** ft
6. Horizontal distance from unit to obstruction: .....**0.0** ft

Detailed Acoustics Information

Octave Band Center Freq. Hz	63	125	250	500	1k	2k	4k	8k	Overall
A	85.6	84.7	80.5	76.0	72.4	68.0	62.8	59.3	89.2 Lw
B	59.4	68.6	71.9	72.8	72.4	69.2	63.8	58.2	78.5 LwA
C	53.2	52.3	48.1	43.6	40.0	35.6	30.4	26.9	56.8 Lp
D	27.0	36.2	39.5	40.4	40.0	36.8	31.4	25.8	46.1 LpA

Legend
A Sound Power Levels at Unit's Acoustic Center, Lw
B A-Weighted Sound Power Levels at Unit's Acoustic Center, LwA
C Sound Pressure Levels at Specific Distance from Unit, Lp
D A-Weighted Sound Pressure Levels at Specific Distance from Unit, LpA

Calculation methods used in this program are patterned after the ASHRAE Guide; other ASHRAE Publications and the AHRI Acoustical Standards. While a very significant effort has been made to insure the technical accuracy of this program, it is assumed that the user is knowledgeable in the art of system sound estimation and is aware of the tolerances involved in real world acoustical estimation. This program makes certain assumptions as to the dominant sound sources and sound paths which may not always be appropriate to the real system being estimated. Because of this, no assurances can be offered that this software will always generate an accurate sound prediction from user supplied input data. If in doubt about the estimation of expected sound levels in a space, an Acoustical Engineer or a person with sound prediction expertise should be consulted.



RTU-7

Tag Cover Sheet
Unit Report
Certified Drawing
Performance Report

Unit Report For RTU-7

Project: REI - 26 Reading, MA 08-24-2022
Prepared By: 11:31AM

Unit Parameters

Unit Model:.....**48FCDM24E3M5-3V1C0**
Unit Size:.....**24 (20 Tons)**
Volts-Phase-Hertz:.....**230-3-60**
Heating Type:.....**Gas**
Duct Cfg:..... **Vertical Supply / Vertical Return**
Low Heat
Two Stage Cooling/Single Circuit

Dimensions (ft. in.) & Weight (lb.) ***

Unit Length:.....**11' 9.5"**
Unit Width:.....**7' 2.375"**
Unit Height: .....**3' 11.75"**

*** Weights and Dimensions are approximate. Weight does not include roof curbs, unit packaging, field installed accessories or factory installed options. Approximate dimensions are provided primarily for shipping purposes. For exact dimensions and weights, refer to appropriate product data catalog.

Base Unit Weight (Does not include any accessories):
..... **2000** lb

Lines and Filters

Gas Line Size:..... **3/4**
Condensate Drain Line Size: **3/4**
Return Air Filter Type:.....**Throwaway**
Return Air Filter Quantity:..... **6**
Return Air Filter Size:.....**20 x 25 x 2**

Selection includes construction throwaway filter into the base fan curve. This filter is not MERV Rated.

Unit Configuration

CO2 Sensor
High Static Option - Vertical Models
Al/Cu - Al/Cu - Louvered Hail Guard
SystemVu Controller
Temperature Ultra Low Leak Economizer w/PE (cent) - Vertical Air Only
Unpowered Convenience Outlet
Non-Fused Disconnect
Standard Packaging

Warranty Information

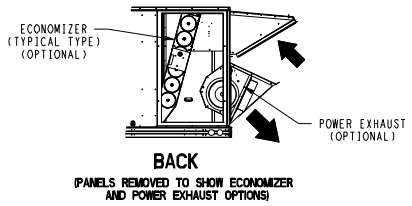
1-Year parts(std.)
5-Year compressor parts(std.)
10-Year heat exchanger - Aluminized(std.)
3-Year SystemVu Controller

No optional warranties were selected.

NOTE: Please see Warranty Catalog 500-089 for explanation of policies and ordering methods.

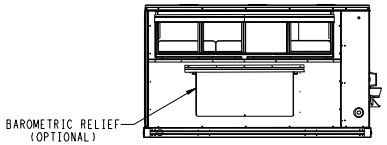
Ordering Information

Part Number	Description	Quantity
48FCDM24E3M5-3V1C0	Rooftop Unit	1
Field Installed Accessories		
20X25X2-M8-R-P6	20x25x2 MERV-8 replacement air filters	1



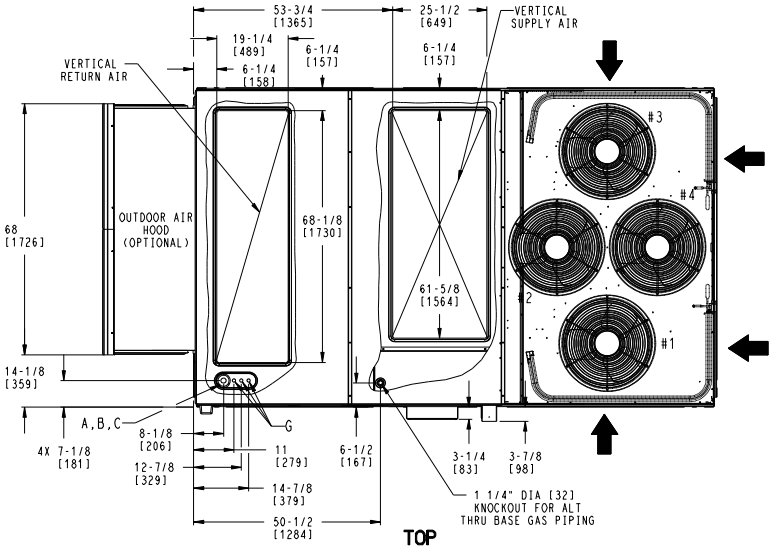
BACK

(PANELS REMOVED TO SHOW ECONOMIZER AND POWER EXHAUST OPTIONS)



LEFT

SHOWN WITH THE BAROMETRIC RELIEF OPTION INSTALLED



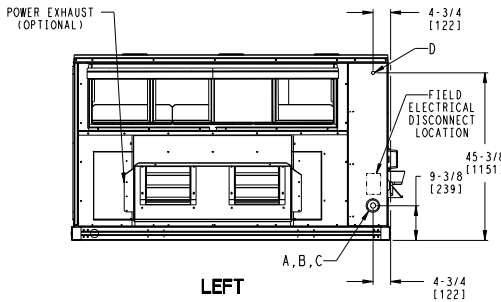
TOP

	CONNECTION SIZES
A	1 3/8" DIA [35] FIELD POWER SUPPLY KNOCKOUT
B	3" DIA [76] FIELD POWER SUPPLY KNOCKOUT
C	3 5/8" DIA [92] FIELD POWER SUPPLY KNOCKOUT
D	7/8" DIA [22] FIELD CONTROL WIRING HOLE
F	3/4"-14 NPT GAS CONNECTION (NOT SHOWN)
G	7/8" DIA [22] FIELD CONTROL WIRING KNOCKOUT

UNIT	H
24 SIZE	49-3/8 [1253]
28 SIZE	57-3/8 [1456]

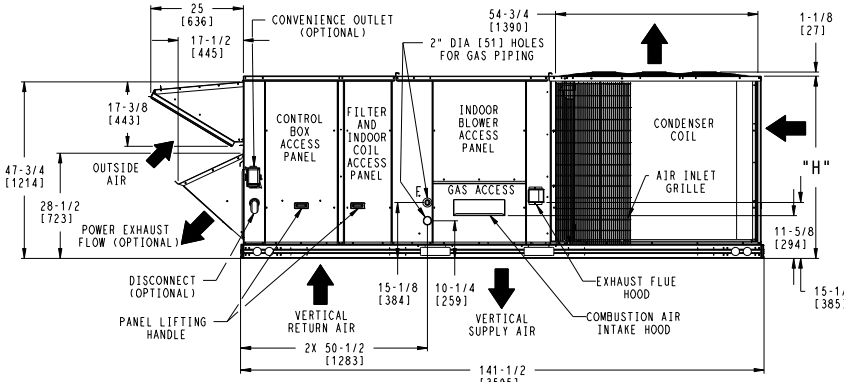
NOTES:

1. DIMENSIONS ARE IN INCHES. DIMENSIONS IN [ ] ARE IN MILLIMETERS.
2. CENTER OF GRAVITY
3. DIRECTION OF AIR FLOW
4. ALL VIEW DRAWN USING 3RD ANGLE

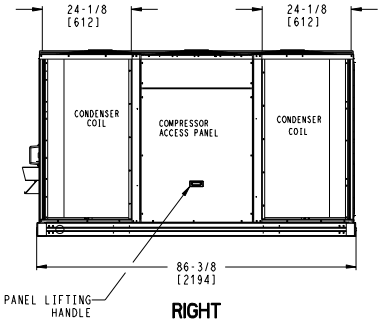


LEFT

SHOWN WITH THE POWER EXHAUST OPTION INSTALLED



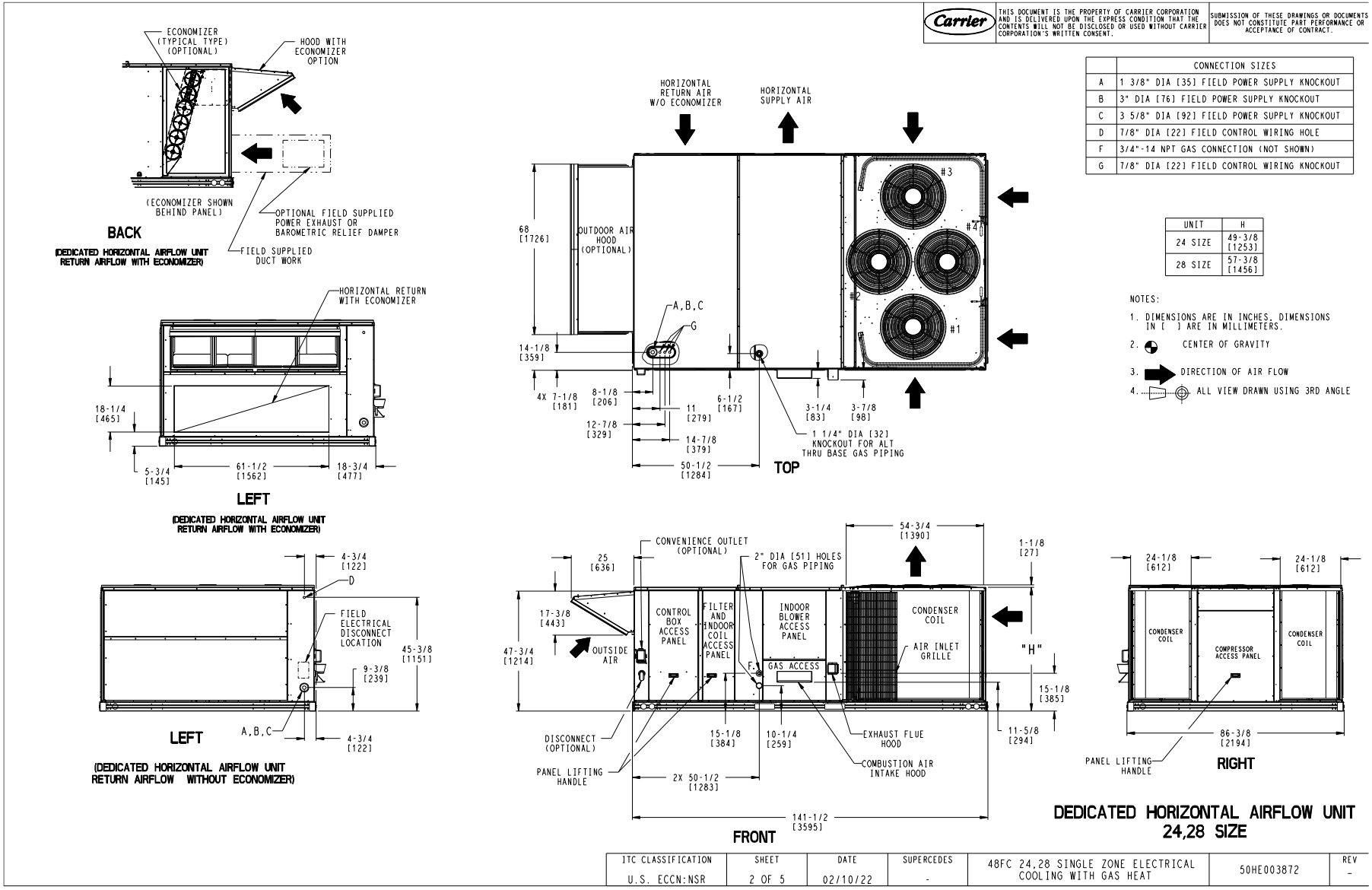
FRONT



RIGHT

DEDICATED VERTICAL AIRFLOW UNIT 24,28 SIZE

ITC CLASSIFICATION	SHEET	DATE	SUPERCEDES	48FC 24,28 SINGLE ZONE ELECTRICAL COOLING WITH GAS HEAT	50HE003872	REV
U.S. ECCN:NSR	1 OF 5	02/10/22	-			-


Carrier
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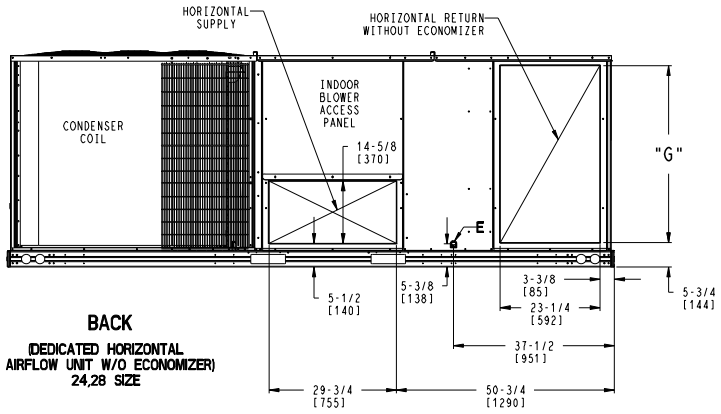
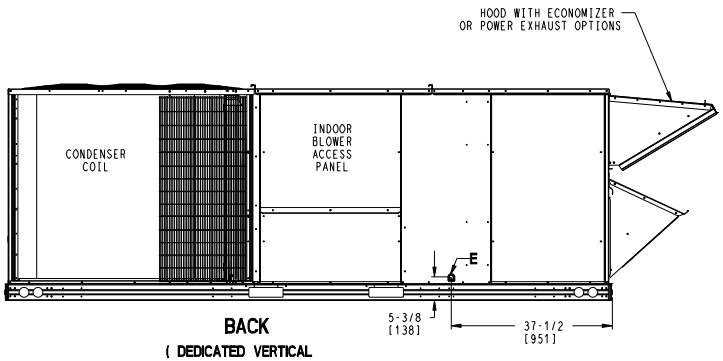
SUBMISSION OF THESE DRAWINGS OR DOCUMENTS DOES NOT CONSTITUTE PART PERFORMANCE OR ACCEPTANCE OF CONTRACT.
ECONOMIZER (TYPICAL TYPE) (OPTIONAL)
HOOD WITH ECONOMIZER OPTION
(ECONOMIZER SHOWN BEHIND PANEL)
OPTIONAL FIELD SUPPLIED POWER EXHAUST OR BAROMETRIC RELIEF DAMPER
FIELD SUPPLIED DUCT WORK
BACK
(DEDICATED HORIZONTAL AIRFLOW UNIT RETURN AIRFLOW WITH ECONOMIZER)
HORIZONTAL RETURN WITH ECONOMIZER
18-1/4 [465]
5-3/4 [145]
61-1/2 [1562]
18-3/4 [477]
LEFT
(DEDICATED HORIZONTAL AIRFLOW UNIT RETURN AIRFLOW WITH ECONOMIZER)
4-3/4 [122]
D
FIELD ELECTRICAL DISCONNECT LOCATION
45-3/8 [1151]
9-3/8 [239]
A,B,C
4-3/4 [122]
LEFT
(DEDICATED HORIZONTAL AIRFLOW UNIT RETURN AIRFLOW WITHOUT ECONOMIZER)
HORIZONTAL RETURN AIR W/O ECONOMIZER
HORIZONTAL SUPPLY AIR
68 [1726]
OUTDOOR AIR HOOD (OPTIONAL)
#3
#4
#2
#1
A,B,C
G
14-1/8 [359]
4X 7-1/8 [181]
8-1/8 [206]
11 [279]
6-1/2 [167]
12-7/8 [329]
14-7/8 [379]
3-1/4 [83]
3-7/8 [98]
1 1/4" DIA [32] KNOCKOUT FOR ALT THRU BASE GAS PIPING
50-1/2 [1284]
TOP
CONNECTION SIZES
A 1 3/8" DIA [35] FIELD POWER SUPPLY KNOCKOUT
B 3" DIA [76] FIELD POWER SUPPLY KNOCKOUT
C 3 5/8" DIA [92] FIELD POWER SUPPLY KNOCKOUT
D 7/8" DIA [22] FIELD CONTROL WIRING HOLE
F 3/4"-14 NPT GAS CONNECTION (NOT SHOWN)
G 7/8" DIA [22] FIELD CONTROL WIRING KNOCKOUT
UNIT H
24 SIZE 49-3/8 [1253]
28 SIZE 57-3/8 [1456]
NOTES:
1. DIMENSIONS ARE IN INCHES. DIMENSIONS IN [ ] ARE IN MILLIMETERS.
2. CENTER OF GRAVITY
3. DIRECTION OF AIR FLOW
4. ALL VIEW DRAWN USING 3RD ANGLE
54-3/4 [1390]
1-1/8 [27]
CONVENIENCE OUTLET (OPTIONAL)
2" DIA [51] HOLES FOR GAS PIPING
25 [636]
17-3/8 [443]
47-3/4 [1214]
OUTSIDE AIR
CONTROL BOX ACCESS PANEL
FILTER AND INDOOR COIL ACCESS PANEL
INDOOR BLOWER ACCESS PANEL
CONDENSER COIL
AIR INLET GRILLE
"H"
GAS ACCESS
15-1/8 [385]
11-5/8 [294]
DISCONNECT (OPTIONAL)
PANEL LIFTING HANDLE
15-1/8 [384]
10-1/4 [259]
EXHAUST FLUE HOOD
COMBUSTION AIR INTAKE HOOD
2X 50-1/2 [1283]
141-1/2 [3595]
FRONT
24-1/8 [612]
24-1/8 [612]
CONDENSER COIL
COMPRESSOR ACCESS PANEL
CONDENSER COIL
86-3/8 [2194]
PANEL LIFTING HANDLE
RIGHT
DEDICATED HORIZONTAL AIRFLOW UNIT
24,28 SIZE
ITC CLASSIFICATION U.S. ECCN:NSR
SHEET 2 OF 5
DATE 02/10/22
SUPERCEDES -
48FC 24,28 SINGLE ZONE ELECTRICAL COOLING WITH GAS HEAT
50HE003872
REV -

	CONNECTION SIZES
E	3/4"-14 NPT CONDENSATE DRAIN

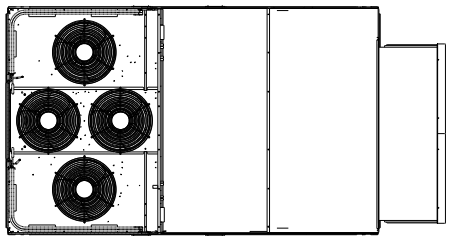
UNIT	G
24 SIZE	41-3/8 [1049]
28 SIZE	49-1/4 [1251]



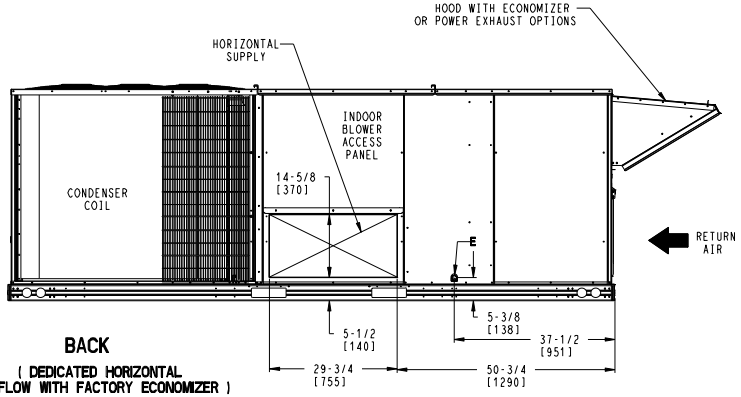
BACK
(DEDICATED HORIZONTAL AIRFLOW UNIT W/O ECONOMIZER)
24,28 SIZE



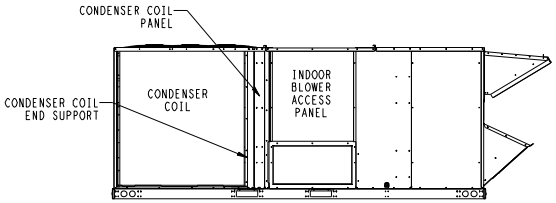
BACK
(DEDICATED VERTICAL AIRFLOW UNIT W/ECONOMIZER)
24,28 SIZE



28 SIZE CONDENSER COIL TOP VIEW



BACK
(DEDICATED HORIZONTAL AIRFLOW WITH FACTORY ECONOMIZER)
24,28 SIZE

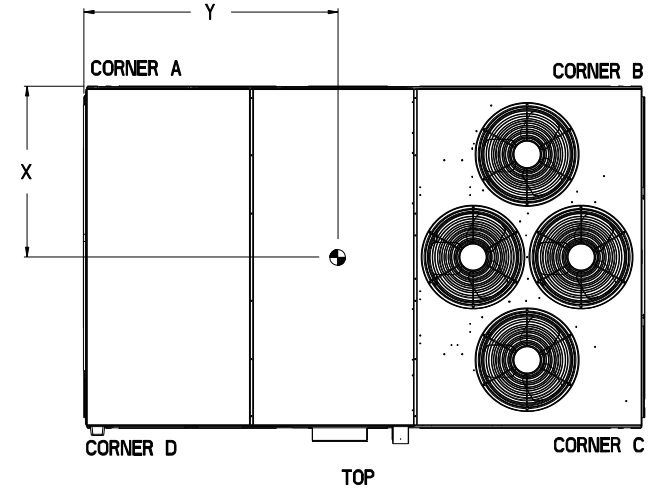


28 SIZE CONDENSER COIL END BRACKET SUPPORT

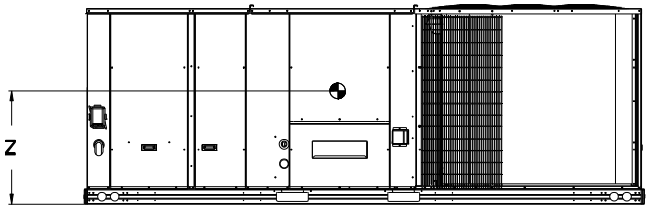
ITC CLASSIFICATION	SHEET	DATE	SUPERCEDES			REV
U.S. ECCN:NSR	3 OF 5	02/10/22	-	48FC 24,28 SINGLE ZONE ELECTRICAL COOLING WITH GAS HEAT	50HE003872	-

UNIT	STD UNIT WEIGHT *		CORNER WEIGHT (A)		CORNER WEIGHT (B)		CORNER WEIGHT (C)		CORNER WEIGHT (D)		C.G.		
	LBS.	KG.	LBS.	KG.	LBS.	KG.	LBS.	KG.	LBS.	KG.	X	Y	Z
48FC24	2000	907	429	195	505	229	576	261	489	222	76 1/2 [1943]	46 [1168]	16 1/2 [419]
48FC28	2174	986	458	208	583	264	634	288	498	226	79 1/4 [2013]	45 [1143]	19 [483]

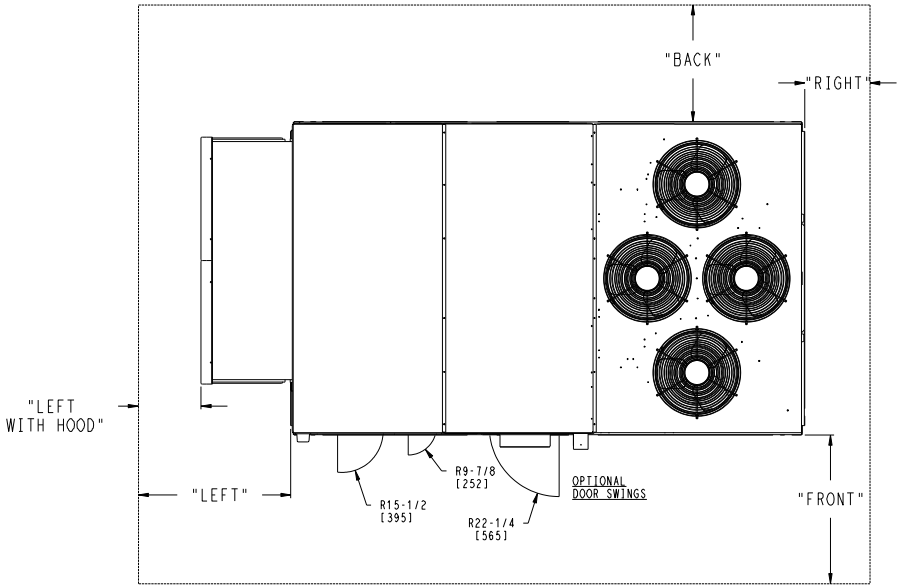
* STANDARD UNIT WEIGHT IS WITH LOW GAS HEAT AND WITHOUT PACKAGING.
FOR OTHER OPTIONS AND ACCESSORIES, REFER TO THE PRODUCT DATA CATALOG.



TOP



FRONT

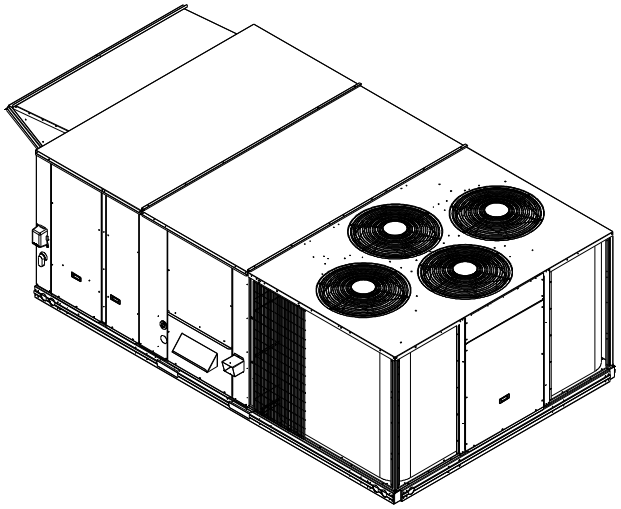


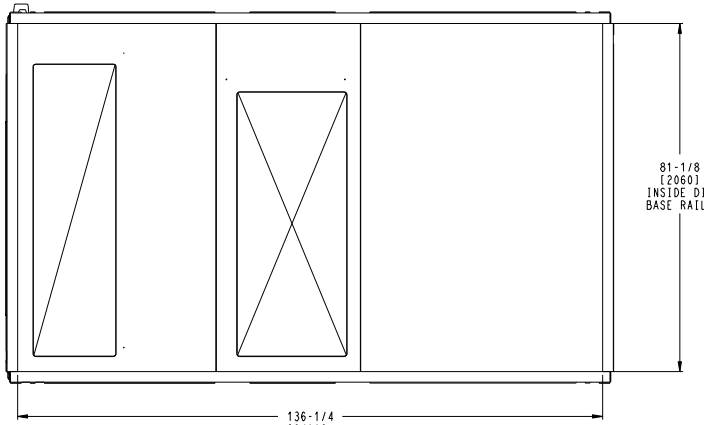
NOTES:

1. CLEARANCE ABOVE THE UNIT TO BE 72"
2. FOR ALL MINIMUM CLEARANCES LOCAL CODES OR JURISDICTIONS MAY PREVAIL.

	CLEARANCE		
	SERVICE WITH:	SERVICE WITH:	OPERATING
SURFACE	CONDUCTIVE BARRIER	NONCONDUCTIVE BARRIER	CLEARANCE
FRONT	48 [1219mm]	36 [914mm]	18 [457mm]
LEFT	48 [1219mm]	42 [1067mm]	18 [457mm]
BACK	42 [1067mm]	36 [914mm]	18 [457mm]
LEFT WITH HOOD	36 [914mm]	36 [914mm]	18 [457mm]
RIGHT	36 [914mm]	36 [914mm]	18 [457mm]
TOP	72 [1829mm]	72 [1829mm]	72 [1829mm]

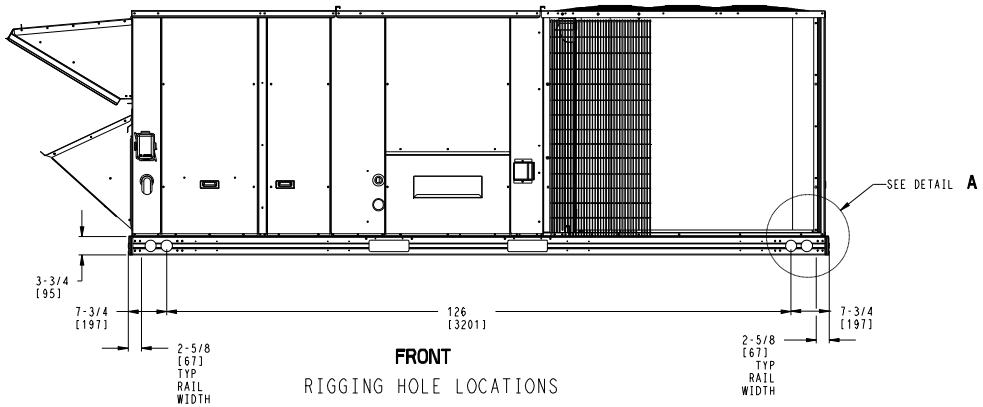
ITC CLASSIFICATION	SHEET	DATE	SUPERCEDES			REV
U.S. ECCN:NSR	4 OF 5	02/10/22	-	48FC 24,28 SINGLE ZONE ELECTRICAL COOLING WITH GAS HEAT	50HE003872	-





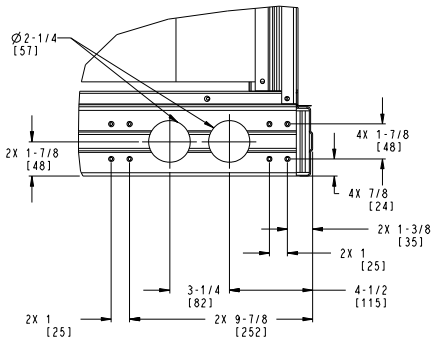
BOTTOM

INSIDE BASERAIL DIMENSIONS



FRONT

RIGGING HOLE LOCATIONS



DETAIL **A**
TYP 4 PLCS

ITC CLASSIFICATION	SHEET	DATE	SUPERCEDES			REV
U.S. ECCN:NSR	5 OF 5	02/10/22	-	48FC 24,28 SINGLE ZONE ELECTRICAL COOLING WITH GAS HEAT	50HE003872	-

Part Number:48FCDM24E3M5-3V1C0

ARI EER:	**10.00**	
IEER:	**14.5**	

Base Unit Dimensions

Unit Length:	**141.5**	in
Unit Width:	**86.4**	in
Unit Height:	**47.8**	in
Base Unit Weight (Does not include any accessories):	**2000**	lb

Unit

Unit Voltage-Phase-Hertz:	**230-3-60**	
Air Discharge:	**Vertical**	
Fan Drive Type:	**Vane Axial**	
Actual Airflow:	**8000**	CFM
Site Altitude:	**0**	ft

Cooling Performance

Condenser Entering Air DB:	**95.0**	F
Evaporator Entering Air DB:	**80.0**	F
Evaporator Entering Air WB:	**67.0**	F
Entering Air Enthalpy:	**31.44**	BTU/lb
Evaporator Leaving Air DB:	**58.6**	F
Evaporator Leaving Air WB:	**56.9**	F
Evaporator Leaving Air Enthalpy:	**24.32**	BTU/lb
Gross Cooling Capacity:	**256.07**	MBH
Gross Sensible Capacity:	**184.89**	MBH
Compressor Power Input:	**20.65**	kW
Coil Bypass Factor:	**0.113**	

Heating Performance

Heating Airflow:	**8000**	CFM
Entering Air Temp:	**70.0**	F
Leaving Air Temp:	**90.6**	F
Gas Heating Input Capacity:	**176.0 / 220.0**	MBH
Gas Heating Output Capacity:	**142.0 / 178.0**	MBH
Temperature Rise:	**20.6**	F
Thermal Efficiency (%):	**81.0**	

Supply Fan

External Static Pressure:	**0.50**	in wg
Options / Accessories Static Pressure		
Economizer:	**0.08**	in wg
Power Exhaust:	**(Fan Data Includes Drop)**	
MERV-8 Filter Kit:	**0.15**	in wg
Total Application Static (ESP + Unit Opts/Acc.):	**0.74**	in wg
Fan RPM:	**1747**	
Fan Power:	**3.79**	BHP
NOTE:	**Selected IFM RPM Range: 250 - 2200**	

Selection includes construction throwaway filter into the base fan curve. This filter is not MERV Rated.

Filter pressure drop assumes a clean filter and is intended to be an estimate based on available supplier data. The actual pressure drop the unit experiences may vary due to alternate suppliers or filter loading over time.

Power Exhaust

Return Duct Static:	**0.40**	in wg
Max. Air to Exhaust:	**4590**	CFM

Performance Summary For RTU-7

Project: REI - 26 Reading, MA 08-24-2022
Prepared By: 11:31AM

Electrical Data

Voltage Range: ..... **187 - 253**
Compressor #1 RLA: **34**
Compressor #1 LRA: **240**
Compressor #2 RLA: **34**
Compressor #2 LRA: **240**
Indoor Fan Motor Type: ..... **HIGH**
Indoor Fan Motor FLA: **12.6**
Combustion Fan Motor FLA (ea): **0.52**
Power Supply MCA: **119.5**
Power Supply MOCP (Fuse or HACR): **150**
Disconnect Size FLA: **128**
Disconnect Size LRA: **548**
Electrical Convenience Outlet: ..... **None**
Power Exhaust [Motor Qty / FLA(ea motor)]: ..... **2 / 5.9**
Outdoor Fan [Qty / FLA (ea)]: ..... **4 / 1.5**

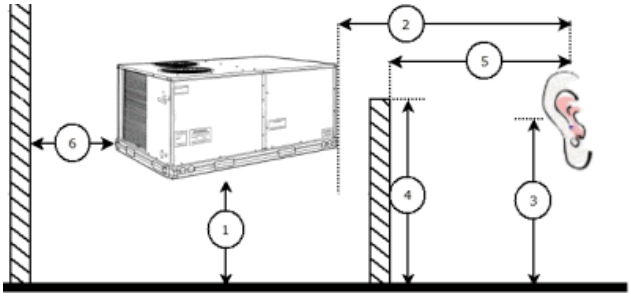
Control Panel SCCR: 5kA RMS at Rated Symmetrical Voltage

Acoustics

Sound Power Levels, db re 10E-12 Watts

	Discharge	Inlet	Outdoor
63 Hz	93.1	93.3	95.6
125 Hz	86.5	75.6	87.5
250 Hz	79.5	69.7	84.2
500 Hz	79.3	62.4	84.2
1000 Hz	73.4	56.5	81.7
2000 Hz	71.8	52.7	77.9
4000 Hz	71.7	46.3	73.2
8000 Hz	63.2	34.4	66.3
A-Weighted	81.2	69.5	87.0

Advanced Acoustics



Advanced Accoustics Parameters

1. Unit height above ground: ..... **30.0** ft
2. Horizontal distance from unit to receiver: ..... **50.0** ft
3. Receiver height above ground: ..... **5.7** ft
4. Height of obstruction: ..... **0.0** ft
5. Horizontal distance from obstruction to receiver: . **0.0** ft
6. Horizontal distance from unit to obstruction: ..... **0.0** ft

Detailed Acoustics Information

Performance Summary For RTU-7

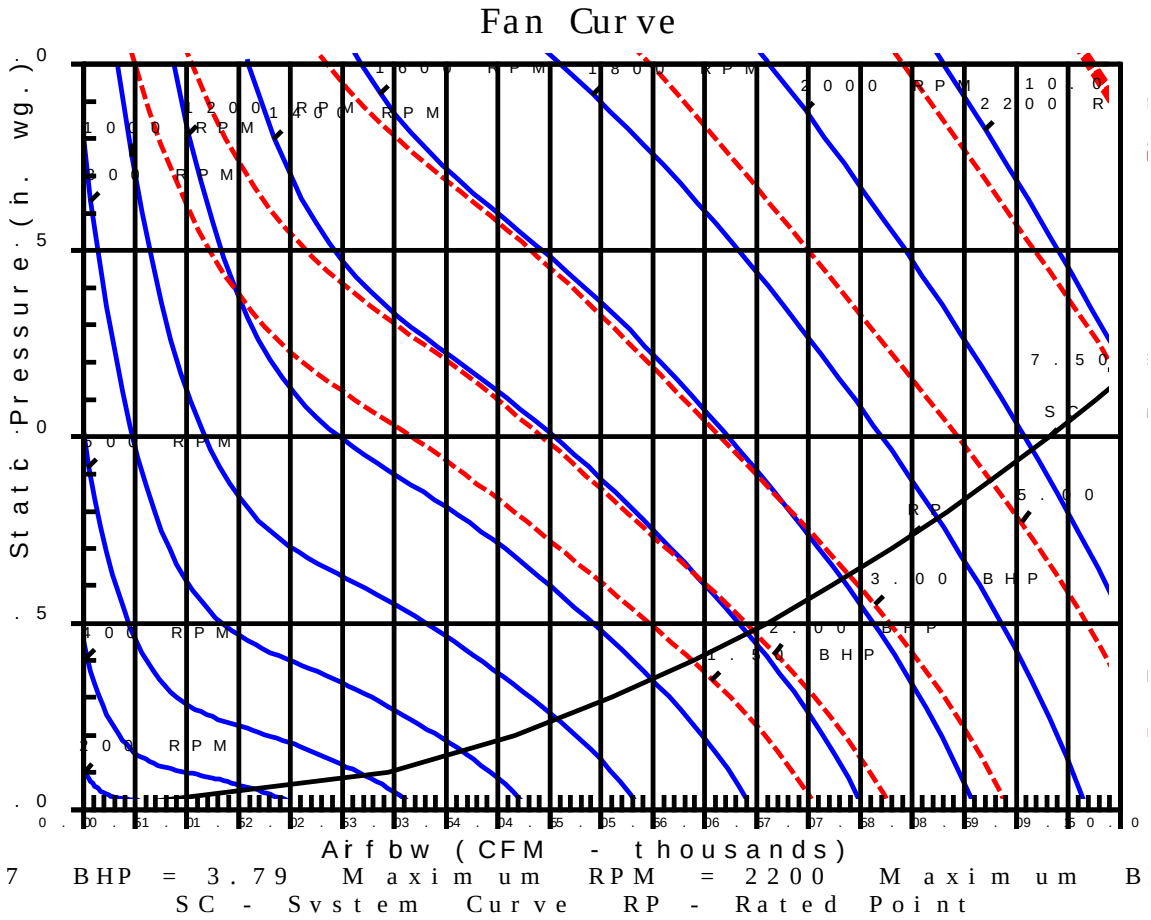
Project: REI - 26 Reading, MA
Prepared By:

08-24-2022
11:31AM

Octave Band Center Freq. Hz	63	125	250	500	1k	2k	4k	8k	Overall
A	95.6	87.5	84.2	84.2	81.7	77.9	73.2	66.3	96.9 Lw
B	69.4	71.4	75.6	81.0	81.7	79.1	74.2	65.2	86.5 LwA
C	63.2	55.1	51.8	51.8	49.3	45.5	40.8	33.9	64.5 Lp
D	37.0	39.0	43.2	48.6	49.3	46.7	41.8	32.8	54.1 LpA

Legend
A Sound Power Levels at Unit's Acoustic Center, Lw
B A-Weighted Sound Power Levels at Unit's Acoustic Center, LwA
C Sound Pressure Levels at Specific Distance from Unit, Lp
D A-Weighted Sound Pressure Levels at Specific Distance from Unit, LpA

Calculation methods used in this program are patterned after the ASHRAE Guide; other ASHRAE Publications and the AHRI Acoustical Standards. While a very significant effort has been made to insure the technical accuracy of this program, it is assumed that the user is knowledgeable in the art of system sound estimation and is aware of the tolerances involved in real world acoustical estimation. This program makes certain assumptions as to the dominant sound sources and sound paths which may not always be appropriate to the real system being estimated. Because of this, no assurances can be offered that this software will always generate an accurate sound prediction from user supplied input data. If in doubt about the estimation of expected sound levels in a space, an Acoustical Engineer or a person with sound prediction expertise should be consulted.



Crystal Distribution, Inc.
17560 Tyler Street NW
Elk River, MN 55330
Phone: 763.391.7790
Toll Free: 1.888.234.7001

CDI QUOTE #2094776
Date: 08/24/2022
Customer: Md Arif (CARRIER CORP)
Job Tag: REI - 26 Reading, MA
Purchase Order #

CURBS

Line	Quantity	CDI Part #	Description	Tag
A	1	1-2051-4158	**Curb Adapter** *Old Model:* SCA240H *New Model:* 48FCDM24 Top Brace; Insulated Condenser Panel (where required); Fully Insulated (1" Duct Liner R Value 3.85)	RTU-7

Thank you for choosing CDI,
Donovan Kelley

OPTIONS:
MATERIAL: 16ga. GALV STEEL
INSULATED PANELS (WHERE REQUIRED)
1" 1-1/2LB DUCT INSULATION (R VALUE 3.85)
GASKET PROVIDED WITH CURB
1 1/2" ADDED TO EXISTING CURB O.D.

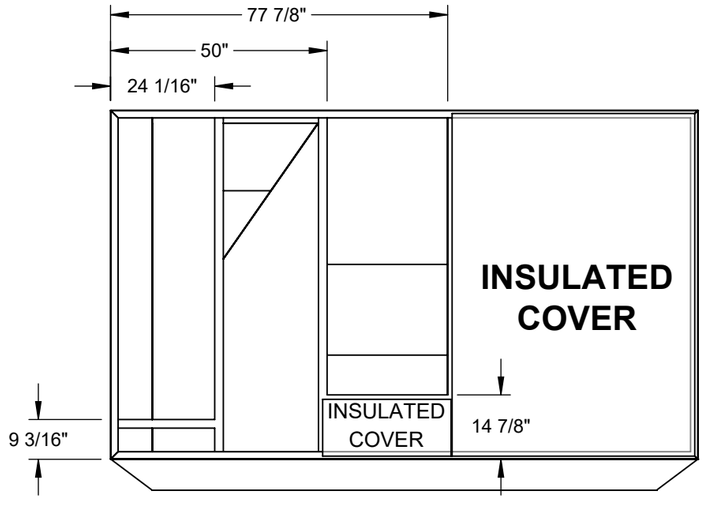
DIMENSIONED AND TOLERENCED PER ANSI Y14.5M-1982

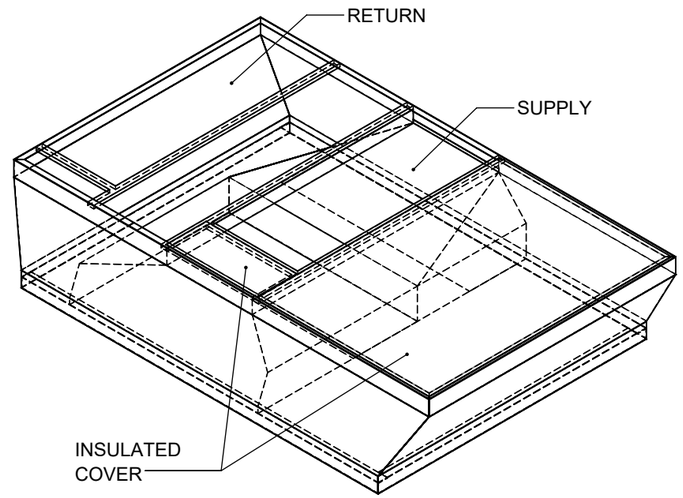
Attn:_____

Tag:_____

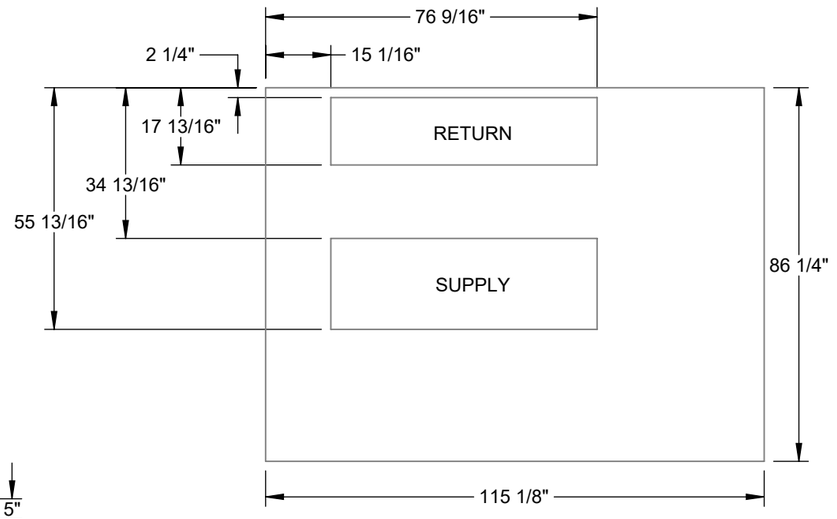
Approval:_____

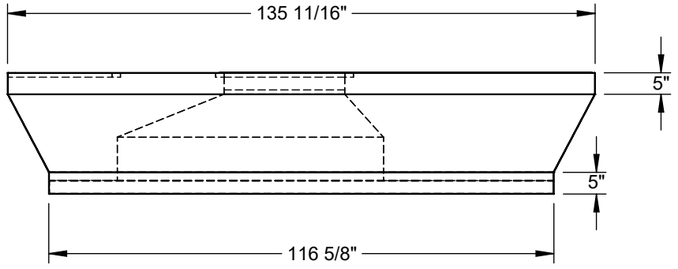
REVISIONS				
REV.	ECO#	DESCRIPTION	DATE	APPROVED
1		INITIAL DRAWING	12/5/2021	NMN

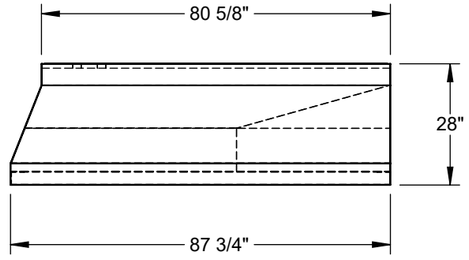




EXISTING CURB LAYOUT







CURB SHOWN IS CDI STANDARD CONFIGURATION CDI RESERVES THE RIGHT TO CHANGE LAYOUT WITHOUT NOTIFICATION. IF CURB IS NEEDED IN A DIFFERENT CONFIGURATION CDI MUST BE NOTIFIED PRIOR TO PLACING AN ORDER.

OPERATIONAL HEIGHT OF CDI ADAPTER IS 3" LESS THAN OVERALL CURB HEIGHT SHOWN.

APPROVALS	DATE
DRAWN: nnelms	12/5/2021
CHECKED:	

DIMENSIONS ARE AS FOLLOWS: 1.00 in [25.40 mm]

TITLE/FILE NAME: 1-2051-4158

*VERIFY EXISTING CURB OD
*VERIFY SUPPLY AND RETURN OPENINGS
*NOTE ANY CHANGES
*CALL WITH ANY QUESTIONS
*FAX BACK IF DRAWING IS OK AS IS

3RD ANGLE PROJECTION

Contact us @ www.cdicurbs.com or 1-888-234-7001

APPROXIMATE CURB WEIGHT (LBS.): 541.71

ECO #:

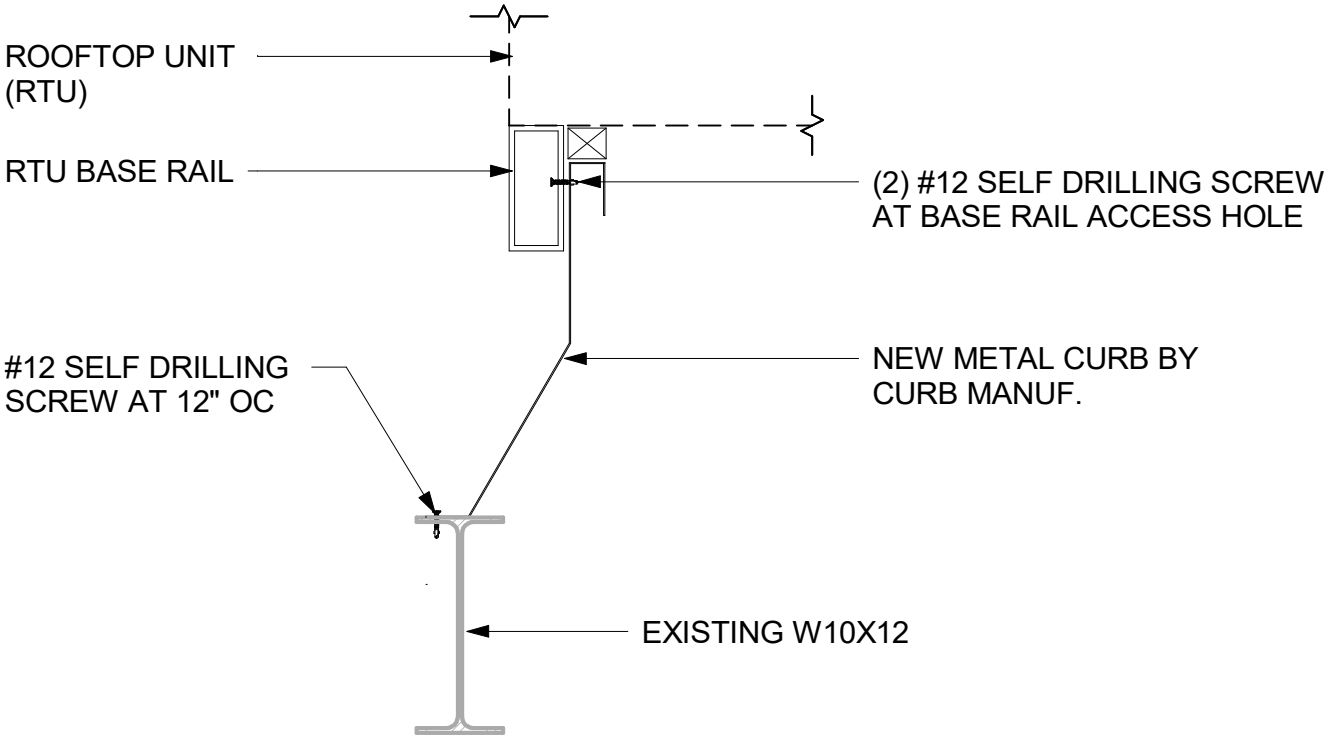
REV: 1

SCALE: 1:35

SHEET: 1 OF 4

S:\CURBS_CURB_ADAPTERS\1-XXXX-XXXX_CURB_ADAPTERS\1-2XXX-XXXX_LENNOX\1-2051-4158\

Structural Drawings



COMMONWEALTH OF MASSACHUSETTS
VITO
CINFIO
No. 56680
PROFESSIONAL ENGINEER

Vito Cinfio
11/07/2022

VC Engineering
STRUCTURAL ENGINEERING CONSULTING
432 N. HIGHVIEW AVE
ELMHURST, ILLINOIS 60126

ANCHORAGE DETAIL

Project number	22193
Date	11/07/2022
Drawn by	VFC
Checked by	VFC

SSK-01

Scale 1 1/2" = 1'-0"

11/7/2022 10:13:53 PM