MARION COUNTY BOARD OF COMMISSIONERS

Board Session Agenda Review Form

Print Form

Meeting date: ~~November 24, 2021~~ **December 1, 2021**

Department: *Business Services* Agenda Planning Date: 11/18/21 Time required: 10

☐ Audio/Visual aids

Contact: Colleen Coons-Chaffins Phone: 503-373-4426

Department Head Signature:

TITLE

Consider approval of the Purchase Order with Trane U.S. Inc for the replacement of (4) Intellipak Rooftop Air Conditioning Units & Upgrade of HVAC Controls Systems.

Issue, Description & Background

Marion County Courthouse Square has four main heating, ventilation, and air conditioning units (HVAC) that services the entire building. These Trane units are original to the building and were not replaced during the building's remediation. They have performed passed there expected life cycle and are failing more frequently requiring costly repairs.

We are requesting the existing units be replaced with the Intellipak Units for advanced energy efficiency and integrated controls for built-in connectivity These units have a specific foot print, weight and structural requirements. Therefore, any other system would require substantially more work and costs such as replacing the roofing, structural engineering, control integration and curb modifications.

In 2020, Trane completed an energy analysis and found with the new controls and the use of higher efficiency equipment we will save an estimated 14% in energy costs. The Project will be done in three phases. 1) Equipment purchase; 2) upgrade the HVAC control system; and 3) installation of equipment. The controls portion of this project will be done before the units are replaced as the new units require a specific controller to work with the existing "Tracer Summit" proprietary system. Facilities Management supports the sequencing plan provided by the Contractor for the least amount of disruption to building operations and based on the different aspects required to complete the project, Facilities Management believes the proposals meets the county's economical and quality standards.

Financial Impacts:

$1,293,317.00 CIP#22-010

Impacts to Department & External Agencies

The entire Courthouse Square building will be affected at one point or another during the project. We will be coordinating with the liaisons from each department or agency in the building as to the potential impacts they may feel. The majority of the impact will be temperature related. We are doing as much on the weekend to keep the impacts to a minimum.

Options for Consideration:

1) Approve the two Purchase Orders with Trane U.S for equipment, installation, upgrade HVAC Controls
2) Withhold approvals at this time for the Purchase Order with Trane U.S. Inc.

Recommendation:

Business Services recommends the approval of the Purchase Order with Train U.S. Inc., in the amount of Equipment PO $691,025.00 & Installation & Upgrade HVAC Controls $602,292.00 Total$1,293,317.00

List of attachments:

Trane Proposals, US Communities Cooperative Contract

Presenter:

Terry Stoner and Wesley Miller

MARION COUNTY BOARD OF COMMISSIONERS

Board Session Agenda Review Form

Print Form

Copies of completed paperwork sent to the following: (Include names and e-mail addresses.)

Copies to: Tina Toney, Business Services Contracts Specialist

Marion County
OREGON
FINANCE DEPARTMENT

Contract Review Sheet

Contract #: BS-4280-21

Person Sending: **Tina Toney** Department: **Business Services**

Contact Phone #: **373-4388** Date Sent: **Friday, November 12, 2021**

☑ Contract ☐ Amendment# ___ ☐ Lease ☐ IGA ☐ MOU ☐ Grant (attach approved grant award transmittal form)

Title: **MC Courthouse Square Rooftop HVAC Replacement**

Contractor's Name: **Trane U.S. Inc**

Term - Date From: **Upon Execution** Expires: **December 31, 2022**

Contract Total: **$1,293,317.00** Amendment Amount: _____ New Contract Total: _____

Source Selection Method: Cooperative Procurement (attach number) # **USC-15-JLP-023**

Additional Considerations (check all that apply)

☐ Board Order# _____
☐ Incoming Funds
☐ Independent Contractor (LECS) approval date: _____
☐ Insurance Waiver (attach)
☑ CIP# **22-010** (required for all goods /software greater than $5,000)
☐ Feasibility Determination (attach approved form)
☐ Federal Funds (attach sub-recipient / contractor analysis)
☐ Reinstatement (attach written justification)
☐ Retroactive (attach written justification)

Description of Services or Grant Award:

Contractor to provide equipment and labor for the replacement of four (4) Intellipak Rooftop Units, Upgrade HVAC Control System, and provide Project Management for the completion of the Project.

Trane of Oregon is a U.S Communities, OMNIA Partners, Public Sector contract that was competitively solicited and publicly awarded by the lead agency using applicable procurement laws and regulations.
Fund CIP 22-010 480-80-81-802-8022-53xxx-080390

FOR FINANCE USE

Date Finance Received: BOC Planning Date: Date Legal Received:

Comments:

REQUIRED APPROVALS:

Finance - Contracts Date Risk Manager Date

Legal Counsel Date Chief Administrative Officer Date

Date _____ ☐ To be filed ☐ Added to Finance Table

☐ Date _____ Returned to department for signature

MARION COUNTY
FINANCE DEPARTMENT

PO Box 14500
555 Court St NE #4247
Salem, OR 97309-5036

Purchase Order		
Purchase Order No	**Revision**	**Page**
901647	0	1

Ship To:

Marion County Facilities MGT
Bldg D Warehouse
3990 Aumsville HWY SE
Salem,OR 97317

Bill To:

Marion County Facilities MGT

PO BOX 14500
Salem,OR 97309-5036
United States

TRANE US INC
PO BOX 98167
CHICAGO, IL 60693 United States

Customer Acct No	Supplier No	Order Date / Buyer	Revised Date / Buyer
	517087	16-NOV-21 D Mahoney-Clark	D Mahoney-Clark
Payment Terms Immediate		Ship Via Best method	F.O.B Destination
Freight Terms Prepaid		Request Or Deliver To	Confirm To / Telephone ( )

Line #	Description	Delivery Date	Quantity	Unit	Unit Price	Total
	Purchase Agreement Effective From: 01-DEC-21 To: 31-DEC-22 Amount Agreed: $1,293,317.00					
					Total	$1,293,317.00

INSTRUCTIONS TO VENDOR

1. Please direct any questions concerning this purchase order to invoiced department.
2. Purchase Order Number must appear on all invoices, packages and shipping documents relating to this order.
3. Separate invoices must be submitted for each Purchase Order.
4. Do not overship or substitute.
5. If you cannot supply the items requested, please notify issuing authority at once.

Note : Please notify department contact (above) for all inquiries regarding this Purchase Order

Authorized By: Camber Schlag
MARION COUNTY PURCHASING
NOT VALID Unless Signed By Purchasing

9443717

HARFORD COUNTY
PUBLIC SCHOOLS
Inspire • Prepare • Achieve

Sean W. Bulson, Ed.D., Superintendent of Schools
102 S. Hickory Avenue, Bel Air, Maryland 21014
Office: 410-838-7300 • www.hcps.org • fax: 410-893-2478

RFP #15-JLP-023 RENEWAL #2
October 1, 2020 – September 30, 2022

This contract renewal is made and entered into this 19th day of August, 2019, by Harford County Public Schools, 102 South Hickory Avenue, Bel Air, Maryland (hereafter referred to as Owner) and Trane, a corporation located at 800 Beaty Street, in the city of Davidson, and State of North Carolina, (hereafter referred to as Contractor).

WHEREAS, Owner and Contractor have entered into an Agreement dated September 29, 2015 (hereafter referred to as the Contract), for the Contractor to provide comprehensive HVAC Products, Installation, Services and Related Products and Services in accordance with RFP #15-JLP-023.

WHEREAS, the original Contract term will expire on September 30, 2020;

THEREFORE, for and in consideration of the mutual promises to each other, as in hereinafter set forth, the parties hereto do mutually agree to renew the Contract as per the conditions set forth in the original Contract, as follows:

1. Owner chooses to offer the second and final option to renew this contract for two (2) year for the time period from October 1, 2020 through September 30, 2022.
2. Pricing structures and related pricing terms will remain the same as the original terms and conditions.
3. All other terms, conditions and provisions of the Contract remain in effect.
4. There is no renewals remaining for this Contract.

WHEREAS, the parties hereto desire to set the terms of the renewal to writing;

IN WITNESS WHEREOF, Owner and the Contractor have executed the renewal agreement the day and year written above.

HARFORD COUNTY PUBLIC SCHOOLS

By: Bobbie Wilkerson
Signature

Name: Bobbie Wilkerson, CPPO, CPPB

Title: Supervisor of Purchasing

Date: 8/19/2019

TRANE

By: Alan L Fullerton
Signature

Name: Alan L. Fullerton

Title: Vice President - Sales

Date: 8/15/19

CONTRACT

RFP #15-JLP-023

THIS AGREEMENT, made this 29th day of September, 2015, by and between Board of Education of Harford County, acting herein through its Superintendent, hereafter called "Owner" and Trane U.S. Inc., a corporation located at 10947 Golden West Drive, #100, Hunt Valley, Maryland, hereinafter called "Contractor".

WITNESSETH: That for and in consideration of the payments and agreements hereinafter mentioned, to be made and performed by the OWNER, the CONTRACTOR, hereby agrees with the OWNER to commence and complete the services described as follows:

Provide comprehensive HVAC Products, Installation, Services and Related Products and Services on a national scale in indefinite quantities on an as-needed basis in accordance and compliance with all specifications, terms and conditions set forth in RFP # 15-JLP-023.

Hereinafter called the Contract, this Agreement shall be for the period October 1, 2015 through September 30, 2018 with renewal options for two additional, two-year periods. Contractor shall perform all duties specified in RFP #15-JLP-023 as they relate to the national scope. This does not include the North Harford Middle School Project, Pricing Project #1. All specifications, Addenda and Proposal are made part of and collectively constitute the Contract.

IN WITNESS WHEREOF, the parties to these presents have executed this Contract in two (2) counterparts, each of which shall be deemed an original.

Signature

Board of Education of Harford County
Witness

Board of Education of Harford County

Barbara P. Canavan, Superintendent of Schools

Board of Education of Harford County – Board President

Signature

TRANE
Company Name

Authorized Contractor Signature

800 Beaty St.
Address

Contractor Witness

DAVIDSON, N.C. 28036
Address

Section 5 – Harford County Schools Purchase Agreement

MASTER PURCHASE AGREEMENT:
By and Between:
HARFORD COUNTY PUBLIC SCHOOLS, MARYLAND
102 S. Hickory Ave.
Bel Air, MD 21014
and

TRANE, U.S.

THIS MASTER PURCHASE AGREEMENT made and entered into this 24th day of September, 2015, by and between Harford County Public Schools, Maryland (hereinafter referred to as "School District", "HCPS" or "District"), and TRANE, U.S. , a corporation authorized to conduct business in the State of Maryland (hereinafter referred to as "Supplier")

This agreement is made on behalf of Harford County Public Schools, Maryland and other participating governmental agencies, through the U.S. Communities Government Purchasing Alliance.

WITNESSETH:

WHEREAS, pursuant to the District, Supplier has submitted a proposal to provide a master agreement for a National Award covering the following: HVAC products, installation, services and related products and services in accordance with the scope, terms and conditions of Request for Proposal, RFP 15-JLP-023, addenda, amendments, appendices, and related correspondence. The Request for Proposal is incorporated in its entirety and included as part of this agreement.

WHEREAS, HCPS desires to engage Supplier to perform said services; and

WHEREAS, HCPS and Supplier desire to state terms and conditions under which Supplier will provide said services to Harford County Public Schools (Lead Agency) and participating public agencies who have registered with U.S. Communities.

NOW, THEREFORE, in consideration of the mutual covenants, condition and promises contained herein, the parties have to agree to as follows:

A. **Services.** Supplier will provide HVAC products, installation, services and related products and services as detailed in the referenced RFP to HCPS, which is attached hereto and incorporated herein as a part of this Master Purchase Agreement.

B. Purchase Order. Purchase order shall mean any authorized written, electronic, telephone or fax order sent or made by HCPS pursuant hereto, including but not limited to, written purchase orders, faxed purchase orders, and orders in such other form and/ or mode of transmission as HCPS and Supplier may from time to time agree including purchases made via procurement credit card.

C. Term. The initial term of this Master Purchase agreement shall be three (3) years from October 1, 2015 (or the date of HCPS Board approval) through September 30, 2018. This Master Purchasing Agreement may then be renewed by mutual written agreement of the parties for two (2) additional, two (2) year periods.

D. Compensation. HCPS agrees to pay, and Supplier agrees to accept as compensation for the products provided pursuant to this Master Purchasing Agreement , the following:

a. The price proposal set forth in the final RFP response and all related Amendments

E. Invoicing. Supplier agrees to invoice HCPS as deliveries are completed or charge purchases to an authorized HCPS Visa credit card. Invoices shall be delivered to HCPS accounts payable. Each invoice shall include- as applicable- the following data: Item Number, Purchase Order Number, Item Description, Quantity Purchased, Unit Price, Extended price and Delivery location. All purchase orders will be invoiced separately. Each invoice submitted by Supplier shall be paid by HCPS within thirty (30) days after approval. The Supplier has agreed to accept payment via a procurement credit card (i.e. Visa, MasterCard, etc.) which is the preferred method of payment.

F. Insurance. Supplier shall maintain at its own cost and expense (and shall cause any Subcontractor to maintain) insurance policies in form and substance acceptable to HCPS as detailed in the Request for Proposal.

G. Termination of Contract. This contract may be terminated for cause as per the General Requirements of the RFP, Section 1, L, page 7.

H. Notification. Notices under this Master Purchase Agreement shall be addressed as follows:

Jeff LaPorta, Supervisor of Purchasing
Harford County Public Schools
102 S. Hickory Avenue
Bel Air, MD 21014

The effective date of any notice under this Master Purchasing Agreement shall be the date of the recipient by the addressee. The failure of either party to give notice of default, or to strictly enforce or insist upon compliance with any of the terms or conditions of this Master Purchase Agreement, or the granting of an extension of time for performance shall not constitute the permanent waiver of any term or condition of this Master Purchasing Agreement. This Master Purchasing Agreement and each of its provisions shall remain at all times in full force effect until modified by the parties in writing.

I. **Governing Law.** This contract shall be interpreted under and governed by the laws of the State of Maryland. Disputes will be settled as per the stipulations contained within the Request for Proposal.

J. **Incorporation of Appendices.** All provisions of Appendices and Amendments are hereby incorporated herein and made a part of this Master Purchase Agreement. In the event of any apparent conflict between any provisions set forth in the main body of the Master Purchasing Agreement and in any provision set forth in the Appendices and Amendments the provisions shall be interpreted, to the extent possible, as if they do not conflict. In the event that such an interpretation is not possible, the provisions set forth in the main body of this Master Purchase Agreement shall control.

K. **Entire Master Purchase Agreement.** This Master Purchase Agreement including the entire RFP solicitation and the Appendices attached hereto contain all the terms and conditions agreed upon by both parties. No other understandings, oral or otherwise, regarding the subject matter of this Master Purchasing Agreement shall be deemed to exist or to bind any of the parties hereto. Not contained herein shall not be binding on either party, nor of any force or effect. Any Best and Final Offer and applicable Amendments are also included and become part of the Master Agreement.

L. **Participating Public Agencies.** Supplier agrees to extend the same terms, covenants and conditions available to HCPS under this Master Purchasing Agreement to other government agencies ("Participating Public Agencies") that, in their discretion, desire to access this Master Purchasing Agreement in accordance with all terms and conditions contained herein or attached hereto. Each participating Public Agency will be exclusively responsible and deal directly with Supplier on matters relating to ordering, delivery, inspection, acceptance, invoicing and payment for products and services in accordance with the terms and conditions of this Master Purchasing Agreement. Any disputes between a Participating Public Agency and Supplier will be resolved directly between them in accordance with and governed by the laws of the State in which the Participating Public agency exists.

IN WITNESS WHEREOF, THE PARTIES HAVE EXCUTED THIS AGREEMENT IN THE YEAR AND DAY AS NOTED:
HARFORD COUNTY PUBLIC SCHOOLS, MARYLAND

by _____ 9/22/16
Superintendent of Schools **Date**

by _____ 9/21/16
Board of Education President **Date**

by _____ 9/27/16
Supervisor of Purchasing **Date**

SUPPLIER:

by _____ 8-13-16
General Manager **Date**
Greg Spencer

CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY): 4/7/2021

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

PRODUCER MARSH & MCLENNAN COMPANIES 1166 Avenue of the Americas New York NY 10036 ATTN: 212-345-6000	CONTACT NAME: Kevin Mashavejian PHONE (A/C, No, Ext): (212) 345 7115 FAX (A/C, No): E-MAIL ADDRESS: Kevin.Mashavejian@marsh.com
INSURED Trane U.S. Inc. 7257 SW Kable Lane Suite 300 Portland, OR 97224 United States	INSURER(S) AFFORDING COVERAGE — NAIC # COMPANY A: ACE Property & Casualty Insurance Co — 20699 COMPANY B: National Union Fire Insurance Company of Pittsburgh, PA — 19445 COMPANY C: Travelers Indemnity Co of America — 25666 COMPANY D: Travelers Property Casualty Co of Amer — 25674

COVERAGES **CERTIFICATE NUMBER:** 591795 **REVISION NUMBER:**

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	ADDL INSD	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS	
B	X COMMERCIAL GENERAL LIABILITY [ ] CLAIMS-MADE [X] OCCUR X Contractual Liability X Time Element Pollution Liability GEN'L AGGREGATE LIMIT APPLIES PER: X POLICY [ ] PRO-JECT [ ] LOC [ ] OTHER:			GL 6547064	4/17/2021	4/17/2022	EACH OCCURRENCE DAMAGE TO RENTED PREMISES (Ea occurrence) MED EXP (Any one person) PERSONAL & ADV INJURY GENERAL AGGREGATE PRODUCTS - COMP/OP AGG $	$7,500,000.00 $1,000,000.00 $10,000.00 $7,500,000.00 $7,500,000.00 $7,500,000.00
B B B	AUTOMOBILE LIABILITY X ANY AUTO ALL OWNED AUTOS SCHEDULED AUTOS HIRED AUTOS NON-OWNED AUTOS PHYSICAL DAMAGE/SELF			CA 6890217 (AOS) CA 7030880 (VA) CA 7030879 (MA) APD - Self Insured	4/17/2021 4/17/2021 4/17/2021	4/17/2022 4/17/2022 4/17/2022	COMBINED SINGLE LIMIT (Ea accident) BODILY INJURY (Per person) BODILY INJURY (Per accident) PROPERTY DAMAGE (Per accident) $	$5,000,000.00
A	X UMBRELLA LIAB X OCCUR EXCESS LIAB CLAIMS-MADE DED RETENTION $			XEUG27968740 006	4/17/2021	4/17/2022	EACH OCCURRENCE AGGREGATE $	$5,000,000.00 $5,000,000.00
C C D D	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? Y/N [N] N / A (Mandatory in NH) If yes, describe under DESCRIPTION OF OPERATIONS below			UB-8M35413A-21-51-K (AOS) UB-9L048059-21-51-D (MN) UB-8M370386-21-51-R (AZ,MA,OR,WI) TWXJ-UB-7434L45A-21 (OH)	4/17/2021 4/17/2021 4/17/2021 4/17/2021	4/17/2022 4/17/2022 4/17/2022 4/17/2022	X PER STATUTE [ ] OTH-ER E.L. EACH ACCIDENT E.L. DISEASE - EA EMPLOYEE E.L. DISEASE - POLICY LIMIT	 $3,000,000.00 $3,000,000.00 $3,000,000.00

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (ACORD 101, Additional Remarks Schedule, may be attached if more space is required)

Please see page 2 for additional information.

CERTIFICATE HOLDER

Marion County
PO Box 14500
Salem, OR 97309-0000
United States

CANCELLATION

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.

AUTHORIZED REPRESENTATIVE
Marsh USA, Inc.
BY: Kevin Mashavejian

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Requested By:Janet Palmer-Ordonez

ADDITIONAL REMARKS SCHEDULE

AGENCY	NAMED INSURED Trane U.S. Inc. 7257 SW Kable Lane Suite 300 Portland, OR 97224 United States
	EFFECTIVE DATE:

ADDITIONAL REMARKS

THIS ADDITIONAL REMARKS FORM IS A SCHEDULE TO ACORD FORM,

FORM NUMBER: _____ **FORM TITLE:** _____

Other Requirements: The General Liability and Automobile Liability policies include a blanket automatic Additional Insured endorsement that provides Additional Insured status to the Certificate Holder, its officials, agents, employees and volunteers, only when there is a written contract that requires such status, and only with regard to work performed on behalf of the named insured. The General Liability and Automobile Liability policies contains a special endorsement with Primary wording.

Job Description:

For questions regarding this certificate of insurance contact: Janet Palmer-Ordonez Email: Janet.PalmerOrdonez@tranetechnologies.com Phone: 5034312585

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ENDORSEMENT # MAN001

This endorsement, effective 12:01 A.M. 04/17/2021 forms a part of

policy No. GL 654-70-64 issued to TRANE TECHNOLOGIES COMPANY LLC

BY NATIONAL UNION FIRE INSURANCE COMPANY OF PITTSBURGH, PA

ADDITIONAL INSURED - WHERE REQUIRED UNDER CONTRACT OR AGREEMENT

This endorsement modifies insurance provided under the following:

COMMERCIAL GENERAL LIABILITY COVERAGE FORM

SECTION II – WHO IS AN INSURED, is amended to include as an additional insured:

(1) Any person or organization to whom you become obligated to include as an additional insured under this policy, as a result of any written contract or agreement you enter into which requires you to furnish insurance to that person or organization of the type provided by this policy, but only with respect to liability to the extent caused by you and arising out of your operations, including both continuing and completed operations, or premises owned by or rented to you; or

(2) Any designated person or organization, designated by you in writing to us, but only with respect to liability to the extent caused by you and arising out of your operations or premises owned by or rented to you and provided the "bodily injury", "property damage" or "personal and advertising injury" occurs subsequent to your written request to designate such person or organization as additional insured.

However, the insurance provided will not exceed the lesser of:

- The coverage and/or limits of this policy, or
- The coverage and/or limits required by said contract or agreement.

All other terms and conditions remain unchanged.

Authorized Representative

Marion Co. Courthouse
HVAC Equipment Replacements
Final Trane Turnkey Proposal

Turnkey Proposal For:
Marion County Facilities
2970 Center Street NE
Salem, OR 97301

Local Trane Office:
Trane U.S. Inc.
7257 SW Kable Lane
Portland, OR 97224-7181

Local Trane Representatives:
Abby Bertholf
Account Manager
Cell: (971) 203-4175
Email: abby.bertholf@trane.com

Rosie Welch
Controls Account Manager
Cell: (503) 310-7469
Email: roisin.welch@trane.com

Proposal ID: 3031042

Quote Number: 14-675535-21-001

Co-op Contract Number: USC 15-JLP-023

Date: September 14, 2021

TRANE TURNKEY PROPOSAL

Executive Summary

Trane is pleased to present a solution to help Marion County reach its performance goals and objectives. This proposed project will enhance your operation by helping you to optimize your resources, improve the comfort in your facility, and reduce energy costs.

We appreciate the effort from Marion County to assist in the HVAC system analysis and business discussions. Because of your efforts, we were able to develop a proposal that offers Turnkey retrofit service solutions to your specific concerns, based on Trane system knowledge and application expertise.

As your partner, Trane is committed to providing Turnkey retrofit services to help achieve a comfortable building environment for the people who occupy the building. For the people who own, manage, and maintain the building, Trane is committed to providing reliable HVAC systems and products that improve performance.

Some key features and benefits Marion County should expect from this project are highlighted below.

- Increased reliability
- Energy savings through efficiency gains with new equipment
- Operational savings with reduced repairs
- Trane factory trained technicians on the equipment
- Safety training and programs
- Direct line to the Trane factory
- Factory warranties
- International company backing our work
- Dedicated Project Manager, Account Manager, and Trane Technician

Trane appreciates the opportunity to earn your business. This investment will provide Marion County with the capability to significantly reduce operating costs and improve comfort conditions in your facility.

We look forward to partnering with Marion County for your Turnkey retrofits service needs. I will be contacting you soon to discuss the proposal and to schedule the next steps.

WE VALUE THE CONFIDENCE YOU HAVE PLACED IN TRANE AND LOOK FORWARD TO PARTNERING WITH YOU.

Abby Bertholf
Account Manager
Cell: (971) 203-4175
Email: abby.bertholf@trane.com

Rosie Welch
Controls Account Manager
Cell: (503) 310-7469
Email: roisin.welch@trane.com

Prepared For:
Terry Stoner and Wes Miller

Date:
September 9, 2021

Job Name:
Marion Co. - Turnkey Budgets

Proposal Number:
3031042

Delivery Terms:
Freight Allowed and Prepaid – F.O.B Factory

Payment Terms:
Net 30

State Contractor License Number:
CCB #137820

Proposal Expiration Date:
30 Days

Scope of Work

“Scope of Work” and notations within are based on the following negotiated scope of work with Kevin Burton and based on the site surveys performed on April 9, 2021. The following projects are being proposed:

1. Replacement of (4) Intellipak Rooftop Units
2. Upgrade of HVAC Controls System

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Confidential and Proprietary Information of Trane U.S. Inc.

Project #1: Intellipak Replacement

Turnkey Installation of HVAC Equipment

- Provide project management for a complete project.
- Trane technicians will decommission old units.
- Provide Trane factory start-up and commissioning of new equipment.
- Provide four (4) Intellipak Rooftop Units (separate proposal provided).

Mechanical Installation

- Removal of (4) existing Trane Intellipak's
- Installation of (4) new Trane Intellipak's including condensate piping, seismic engineering, and attachments
- Re-piping of heat recovery system on AC-4
- Rework/extension of one end of Mechanical Catwalk included system similar to what is currently installed
- Crane and permits included

Electrical Installation

- Disconnect (4) existing Trane Intellipak's
- Reconnect AC-1, AC-2, and AC-3 (no new electrical work included)
- Modify/reconnect electrical on AC-4. Install junction box and splice existing feeder to provide extension to unit's electrical location.

Air Balancing

- All labor and instrumentation to perform the HVAC systems testing, adjusting, and balancing based on mechanical as-built documents provided by the customer.
- Includes a pre-read of existing conditions.

Project Schedule

- Pre-balancing of existing conditions
- Thursday (AC-4 only): catwalk demo
- Friday: decommissioning and electrical disconnect
- Saturday: crane lift to remove and set equipment and catwalk, electrical reconnection, and temp startup to start fan and get air moving in the building
- Monday-Tuesday: hookup gas piping, finish mechanical installation, complete start-up and tie into controls system
- Wednesday-Friday (AC-4) only: catwalk reinstallation
- Balancing of system

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Confidential and Proprietary Information of Trane U.S. Inc.

Proposal Notes/Clarifications

- Work to be performed in 2022
- Balancing of the grilles is not included.
- Excludes testing of duct leakage, water piping pressure, sound level, and vibration.
- Excludes equipment needed to access units and grilles.
- All work to be performed during normal business hours (8am to 5pm, M-F, non-holidays) unless otherwise noted.
- Proposal does not include "Premium Time" or Price Contingency therefor.
- Equipment Order Release and Services rendered are dependent on receipt of PO/Subcontract and credit approval.
- Trane will not perform any work if working conditions could endanger or put at risk the safety of our employees or subcontractors.
- Asbestos or hazardous material abatement removal shall be performed by customer.

Turnkey Systems Services Not Included

- Any new or additional Fire & Life Safety devices/systems.
- Any building modifications or upgrades deemed necessary by building/mechanical/electrical inspectors.
- Unforeseen conditions or deficiencies.
- Items or Labor other than described.
- Any additional work due to any new or disturbed surfaces.
- Hazardous material identification, abatement or removal.
- Additional repairs.

Miscellaneous Mechanical Services Not Included (Unless Otherwise Noted)

- Structural and Seismic Engineering Modifications
- Temporary cooling equipment
- Controls
- Paining/coating
- Heat Trace
- Roof work
- Waterproofing or flashings
- Duct painting or paint prep
- Cutting, coring, patching, or painting
- Ceiling removal, replacement, repair, dust partitions, temporary protections
- Fire stopping outside of scope, fire proofing repair and patch, acoustic caulk or testing

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Project #2: Upgrade HVAC Controls System

Controls Systems and Equipment Included

- Provide and install (3) Trane Tracer BMTB Comm 3/4 Bridge Controllers
- Provide and install (3) Trane Tracer SC+ Building Control Panels with internal web server
- Provide Trane Tracer Ensemble for Enterprise web access to all SC+ controllers in one user interface (County has chosen to host and maintain the server)
- Provide and install (3) Trane Tracer UC Programmable Controllers to replace actively used UPCM's
- Provide and install (2) Trane Tracer UC Programmable Controllers to replace TCM's and PCM
- Provide and install a Wireless Communication Backbone for entire building
- Provide (10) Trane Tracer UC210 Programmable Controllers for future installation
- Provide (10) Wireless Receivers to Mount on VAV Boxes for future installation
- Provide (10) Wireless Zone Sensors for future installation
- Provide (3) year subscription to Trane Tracer TU programming software

Equipment Controlled as part of this Proposal

4	- (NEW) Trane Intellipak Units
1	- Trane Voyager Unit
85	- Trane DDC-VAV terminal units w/ electric reheat
26	- Trane DDC-VAV cooling only terminal units
100	- Trane DDC-VAV fan terminal units w/ electric reheat
2	- Water Heaters and associated water pumps
1	- Computer Room Unit
9	- Exhaust fans

Controls System Services Included

- Project Management to complete the scope described by this proposal
- Engineered Control Submittals and As-Built Drawings
- Control System Programming
- New Control Systems Graphics
- Trane Balancing Software
- Owner Control System Operational Training (provided onsite) – Up to (12) hours.
- Site Survey Report
  - List of devices communicating and not communicating
  - List of programs and description of operating parameters
  - Review of existing site graphic accuracy
  - List of identified system deficiencies and proposed corrections
  - Checkout of existing Sequences pre- and post-upgrade
- 1st Year Parts & Labor Limited Warranty

Controls Installation Services Included

- **See Responsibility Matrix below**
- Installation per Trane standards, utilizing only Trane approved comm and sensor wire
- Control Panel(s) and Low Voltage Wiring installation
- Control electrical installation including device mounting & wiring
- Control tubing including duct static and building static pressure sensing
- Electrical installation of low voltage wiring (and required conduit) is provided for controls for systems listed in this proposal. Open-run Plenum-rated cable (no conduit) will be installed in concealed and accessible areas (above ceilings etc.). All required conduit shall be EMT (No Rigid).

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Controls Systems & Services NOT Included

- **See Responsibility Matrix below**
- Controls for any systems not listed above
- Any work or material due to defective/malfunctioning existing devices not listed in scope as being replaced. This work must be addressed as an additional charge.
- Any temporary controls
- Repair or replacement of any equipment being controlled
- Any demolition, labor overtime charges, and any surface restoration including; cutting, patching, painting, or repairs.

Proposal Notes/Clarifications

- Proposal assumes that all sequence of operations and existing programs not identified as in scope to be modified are operating effectively. Unless optional pre-project site survey is accepted; no re-commissioning or checkout of these systems or programs is included.
- All work to be performed during normal business hours (8am to 5pm, M-F, non-holidays)
- Equipment Order Release and Services rendered are dependent on receipt of PO/Subcontract and credit approval
- Trane will not perform any work if working conditions could endanger or put at risk the safety of our employees or subcontractors
- Owner/contractor to provide accurate mechanical drawings in Autocad, pdf acceptable with permission from Trane controls engineer of record
- Connection to building Ethernet network by others (must be operational at startup)
- Site Survey Report does not include parts and labor to address issues found. If the customer chooses to have those repaired, that is an additional charge.
- Spare controllers and parts for VAV's come with standard 1 year warranty, even when installed later
- All fire/life/safety systems for the building are excluded from this proposal and are not covered by Trane. Stairwell fans are controlled by the buildings FLS system and the BAS.

Trane Controls Responsibility Matrix

RESPONSIBILITY MATRIX	Trane		Owner		Other	
	Furnish	Install	Furnish	Install	Furnish	Install
Control System Upgrade	x	x				
New Floorplan Graphics	x	x				
New Engineered Controls Drawing/As-builts	x	x				
120 V Power to Control Panels	x	x				
Site Survey Report	x	x				
3 Year TU Subscription & Training	x	x				
(10) VAV Controller Replacement Parts	x	x				
New Wireless Communication Backbone	x	x				
Ensemble licenses and Setup	x	x				
Ensemble Server and Maintenance			x	x		
Ethernet Connectivity from Controls System to Owner provided Network			x	x		
Operator Workstation (now web based, not required for use)			x	x		
All Fire/Life/Safety & Smoke Dampers and Control Wiring					x	x

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Pricing and Acceptance

Project #1: Replace (4) Intellipaks (Installation)……..$349,825

Project #2: Upgrade HVAC Control System……..$252,467

Financial items not included

- Bid Bond
- Payment and Performance Bond
- Guarantee of any energy, operational, or other savings

ACCEPTANCE

This proposal is subject to Customer's acceptance of the attached Trane Terms and Conditions (Installation).

We value the confidence you have placed in Trane and look forward to working with you.

COVID-19 NATIONAL EMERGENCY CLAUSE

The parties agree that they are entering into this Agreement while the nation is in the midst of a national emergency due to the Covid-19 pandemic ("Covid-19 Pandemic"). With the continued existence of Covid-19 Pandemic and the evolving guidelines and executive orders, it is difficult to determine the impact of the Covid-19 Pandemic on Trane's performance under this Agreement. Consequently, the parties agree as follows:

1. Each party shall use commercially reasonable efforts to perform its obligations under the Agreement and to meet the schedule and completion dates, subject to provisions below;
2. Each party will abide by any federal, state (US), provincial (Canada) or local orders, directives, or advisories regarding the Covid-19 Pandemic with respect to its performance of its obligations under this Agreement and each shall have the sole discretion in determining the appropriate and responsible actions such party shall undertake to so abide or to safeguard its employees, subcontractors, agents and suppliers;
3. Each party shall use commercially reasonable efforts to keep the other party informed of pertinent updates or developments regarding its obligations as the Covid-19 Pandemic situation evolves; and
4. If Trane's performance is delayed or suspended as a result of the Covid-19 Pandemic, Trane shall be entitled to an equitable adjustment to the project schedule and/or the contract price.

Submitted By: Abby Bertholf & Rosie Welch _____	Cell: (971) 203-4175 Office: (503) 620-8031 Proposal Date: September 14, 2021
CUSTOMER ACCEPTANCE MARION COUNTY FACILITIES	**TRANE ACCEPTANCE** Trane U.S. Inc.
Authorized Representative	Authorized Representative _____
Printed Name	Printed Name
Title	Title _____
Purchase Order Acceptance Date:	Signature Date License Number: CCB #137820

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BS-4275-21 | Trane US |
MC Courthouse Square Rooftop HVAC Replacement

MARION COUNTY SIGNATURE

BOARD OF COMMISSIONERS:

_____

Chair Date

_____

Commissioner Date

_____

Commissioner Date

Authorized Signature: _____

Department Director or designee Date

Authorized Signature: _____

Chief Administrative Officer Date

Reviewed by Signature: _____

Marion County Legal Counsel Date

Reviewed by Signature: _____

Marion County Contracts & Procurement Date

TERMS AND CONDITIONS – COMMERCIAL INSTALLATION
"Company" shall mean Trane U.S. Inc..

1. Acceptance; Agreement. These terms and conditions are an integral part of Company's offer and form the basis of any agreement (the "Agreement") resulting from Company's proposal (the "Proposal") for the commercial goods and/or services described (the "Work"). COMPANY'S TERMS AND CONDITIONS ARE SUBJECT TO PERIODIC CHANGE OR AMENDMENT. The Proposal is subject to acceptance in writing by the party to whom this offer is made or an authorized agent ("Customer") delivered to Company within 30 days from the date of the Proposal. If Customer accepts the Proposal by placing an order, without the addition of any other terms and conditions of sale or any other modification, Customer's order shall be deemed acceptance of the Proposal subject to Company's terms and conditions. If Customer's order is expressly conditioned upon Company's acceptance or assent to terms and/or conditions other than those expressed herein, return of such order by Company with Company's terms and conditions attached or referenced serves as Company's notice of objection to Customer's terms and as Company's counter-offer to provide Work in accordance with the Proposal and the Company terms and conditions. If Customer does not reject or object in writing to Company within 10 days, Company's counter-offer will be deemed accepted. Customer's acceptance of the Work by Company will in any event constitute an acceptance by Customer of Company's terms and conditions. This Agreement is subject to credit approval by Company. Upon disapproval of credit, Company may delay or suspend performance or, at its option, renegotiate prices and/or terms and conditions with Customer. If Company and Customer are unable to agree on such revisions, this Agreement shall be cancelled without any liability, other than Customer's obligation to pay for Work rendered by Company to the date of cancellation.

2. Connected Services. In addition to these terms and conditions, the Connected Services Terms of Service ("Connected Services Terms"), available at https://www.trane.com/TraneConnectedServicesTerms, as updated from time to time, are incorporated herein by reference and shall apply to the extent that Company provides Customer with Connected Services, as defined in the Connected Services Terms.

3. Pricing and Taxes. Unless otherwise noted, the price in the Proposal includes standard ground transportation and, if required by law, all sales, consumer, use and similar taxes legally enacted as of the date hereof for equipment and material installed by Company. Tax exemption is contingent upon Customer furnishing appropriate certificates evidencing Customer's tax exempt status. Company shall charge Customer additional costs for bonds agreed to be provided. Equipment sold on an uninstalled basis and any taxable labor/labour do not include sales tax and taxes will be added. Following acceptance without addition of any other terms and condition of sale or any other modification by Customer, the prices stated are firm provided that notification of release for immediate production and shipment is received at the factory not later than 3 months from order receipt. If such release is received later than 3 months from order receipt date, prices will be increased a straight 1% (not compounded) for each one-month period (or part thereof) beyond the 3 month firm price period up to the date of receipt of such release. If such release is not received within 6 months after date of order receipt, the prices are subject to renegotiation, or at Company's option, the order will be cancelled. Any delay in shipment caused by Customer's actions will subject prices to increase equal to the percentage increase in list prices during that period of delay and Company may charge Customer with incurred storage fees.

4. Exclusions from Work. Company's obligation is limited to the Work as defined and does not include any modifications to the Work site under the Americans With Disabilities Act or any other law or building code(s). In no event shall Company be required to perform work Company reasonably believes is outside of the defined Work without a written change order signed by Customer and Company.

5. Performance. Company shall perform the Work in accordance with industry standards generally applicable in the area under similar circumstances as of the time Company performs the Work Company may refuse to perform any Work where working conditions could endanger property or put at risk the safety of persons. Unless otherwise agreed to by Customer and Company, at Customer's expense and before the Work begins, Customer will provide any necessary access platforms, catwalks to safely perform the Work in compliance with OSHA or state industrial safety regulations.

6. Payment. Customer shall pay Company's invoices within net 30 days of invoice date. Company may invoice Customer for all equipment or material furnished, whether delivered to the installation site or to an off-site storage facility and for all Work performed on-site or off-site. No retention shall be withheld from any payments except as expressly agreed in writing by Company, in which case retention shall be reduced per the contract documents and released no later than the date of substantial completion. Under no circumstances shall any retention be withheld for the equipment portion of the order. If payment is not received as required, Company may suspend performance and the time for completion shall be extended for a reasonable period of time not less than the period of suspension. Customer shall be liable to Company for all reasonable shutdown, standby and start-up costs as a result of the suspension. Company reserves the right to add to any account outstanding for more than 30 days a service charge equal to 1.5% of the principal amount due at the end of each month. Customer shall pay all costs (including attorneys' fees) incurred by Company in attempting to collect amounts due and otherwise enforcing these terms and conditions. If requested, Company will provide appropriate lien waivers upon receipt of payment. Customer agrees that, unless Customer makes payment in advance, Company will have a purchase money security interest in all equipment from Company to secure payment in full of all amounts due Company and its order for the equipment, together with these terms and conditions, form a security agreement. Customer shall keep the equipment free of all taxes and encumbrances, shall not remove the equipment from its original installation point and shall not assign or transfer any interest in the equipment until all payments due Company have been made.

7. Time for Completion. Except to the extent otherwise expressly agreed in writing signed by an authorized representative of Company, all dates provided by Company or its representatives for commencement, progress or completion are estimates only. While Company shall use commercially reasonable efforts to meet such estimated dates, Company shall not be responsible for any damages for its failure to do so.

8. Access. Company and its subcontractors shall be provided access to the Work site during regular business hours, or such other hours as may be requested by Company and acceptable to the Work site' owner or tenant for the performance of the Work, including sufficient areas for staging, mobilization, and storage. Company's access to correct any emergency condition shall not be restricted. Customer grants to Company the right to remotely connect (via phone modem, internet or other agreed upon means) to Customer's building automation system (BAS) and or HVAC equipment to view, extract, or otherwise collect and retain data from the BAS, HVAC equipment, or other building systems, and to diagnose and remotely make repairs at Customer's request.

9. Completion. Notwithstanding any other term or condition herein, when Company informs Customer that the Work has been completed, Customer shall inspect the Work in the presence of Company's representative, and Customer shall either (a) accept the Work in its entirety in writing, or (b) accept the Work in part and specifically identify, in writing, any exception items. Customer agrees to re-inspect any and all excepted items as soon as Company informs Customer that all such excepted items have been completed. The initial acceptance inspection shall take place within ten (10) days from the date when Company informs Customer that the Work has been completed. Any subsequent re-inspection of excepted items shall take place within five (5) days from the date when Company informs Customer that the excepted items have been completed. Customer's failure to cooperate and complete any of said inspections within the required time limits shall constitute complete acceptance of the Work as of ten (10) days from date when Company informs Customer that the Work, or the excepted items, if applicable, has/have been completed.

10. Permits and Governmental Fees. Company shall secure (with Customer's assistance) and pay for building and other permits and governmental fees, licenses, and inspections necessary for proper performance and completion of the Work which are legally required when bids from Company's subcontractors are received, negotiations thereon concluded, or the effective date of a relevant Change Order, whichever is later. Customer is responsible for necessary approvals, easements, assessments and charges for construction, use or occupancy of permanent structures or for permanent changes to existing facilities. If the cost of such permits, fees, licenses and inspections are not included in the Proposal, Company will invoice Customer for such costs.

11. Utilities During Construction. Customer shall provide without charge to Company all water, heat, and utilities required for performance of the Work.

12. Concealed or Unknown Conditions. In the performance of the Work, if Company encounters conditions at the Work site that are (i) subsurface or otherwise concealed physical conditions that differ materially from those indicated on drawings expressly incorporated herein or (ii) unknown physical conditions of an unusual nature that differ materially from those conditions ordinarily found to exist and generally recognized as inherent in construction activities of the type and character as the Work, Company shall notify Customer of such conditions promptly, prior to significantly disturbing same. If such conditions differ materially and cause an increase in Company's cost of, or time required for, performance of any part of the Work, Company shall be entitled to, and Customer shall consent by Change Order to, an equitable adjustment in the Contract Price, contract time, or both.

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13. Pre-Existing Conditions. Company is not liable for any claims, damages, losses, or expenses, arising from or related to conditions that existed in, on, or upon the Work site before the Commencement Date of this Agreement ("Pre-Existing Conditions"), including, without limitation, damages, losses, or expenses involving Pre-Existing Conditions of building envelope issues, mechanical issues, plumbing issues, and/or indoor air quality issues involving mold/mould and/or fungi. Company also is not liable for any claims, damages, losses, or expenses, arising from or related to work done by or services provided by individuals or entities that are not employed by or hired by Company.

14. Asbestos and Hazardous Materials. Company's Work and other services in connection with this Agreement expressly excludes any identification, abatement, cleanup, control, disposal, removal or other work connected with asbestos, polychlorinated biphenyl ("PCB"), or other hazardous materials (hereinafter, collectively, "Hazardous Materials"). Customer warrants and represents that, except as set forth in a writing signed by Company, there are no Hazardous Materials on the Work site that will in any way affect Company's Work and Customer has disclosed to Company the existence and location of any Hazardous Materials in all areas within which Company will be performing the Work. Should Company become aware of or suspect the presence of Hazardous Materials, Company may immediately stop work in the affected area and shall notify Customer. Customer will be exclusively responsible for taking any and all action necessary to correct the condition in accordance with all applicable laws and regulations. Customer shall be exclusively responsible for and, to the fullest extent permitted by law, shall indemnify and hold harmless Company (including its employees, agents and subcontractors) from and against any loss, claim, liability, fees, penalties, injury (including death) or liability of any nature, and the payment thereof arising out of or relating to any Hazardous Materials on or about the Work site, not brought onto the Work site by Company. Company shall be required to resume performance of the Work in the affected area only in the absence of Hazardous Materials or when the affected area has been rendered harmless. In no event shall Company be obligated to transport or handle Hazardous Materials, provide any notices to any governmental agency, or examine the Work site for the presence of Hazardous Materials.

15. Force Majeure. Company's duty to perform under this Agreement is contingent upon the non-occurrence of an Event of Force Majeure. If Company shall be unable to carry out any material obligation under this Agreement due to an Event of Force Majeure, this Agreement shall at Company's election (i) remain in effect but Company's obligations shall be suspended until the uncontrollable event terminates or (ii) be terminated upon 10 days notice to Customer, in which event Customer shall pay Company for all parts of the Work furnished to the date of termination. An "Event of Force Majeure" shall mean any cause or event beyond the control of Company. Without limiting the foregoing, "Event of Force Majeure" includes: acts of God; acts of terrorism, war or the public enemy; flood; earthquake; tornado; storm; fire; civil disobedience; pandemic insurrections; riots; labor/labour disputes; labor/labour or material shortages; sabotage; restraint by court order or public authority (whether valid or invalid), and action or non-action by or inability to obtain or keep in force the necessary governmental authorizations, permits, licenses, certificates or approvals if not caused by Company; and the requirements of any applicable government in any manner that diverts either the material or the finished product to the direct or indirect benefit of the government.

16. Customer's Breach. Each of the following events or conditions shall constitute a breach by Customer and shall give Company the right, without an election of remedies, to terminate this Agreement or suspend performance by delivery of written notice: (1) Any failure by Customer to pay amounts when due; or (2) any general assignment by Customer for the benefit of its creditors, or if Customer becomes bankrupt or insolvent or takes the benefit of any statute for bankrupt or insolvent debtors, or makes or proposes to make any proposal or arrangement with creditors, or if any steps are taken for the winding up or other termination of Customer or the liquidation of its assets, or if a trustee, receiver, or similar person is appointed over any of the assets or interests of Customer; (3) Any representation or warranty furnished by Customer in this Agreement is false or misleading in any material respect when made; or (4) Any failure by Customer to perform or comply with any material provision of this Agreement. Customer shall be liable to Company for all Work furnished to date and all damages sustained by Company (including lost profit and overhead).

17. Indemnity. To the fullest extent permitted by law, Company and Customer shall indemnify, defend and hold harmless each other from any and all claims, actions, costs, expenses, damages and liabilities, including reasonable attorneys' fees, resulting from death or bodily injury or damage to real or tangible personal property, to the extent caused by the negligence or misconduct of their respective employees or other authorized agents in connection with their activities within the scope of this Agreement. Neither party shall indemnify the other against claims, damages, expenses or liabilities to the extent attributable to the acts or omissions of the other party. If the parties are both at fault, the obligation to indemnify shall be proportional to their relative fault. The duty to indemnify will continue in full force and effect, notwithstanding the expiration or early termination hereof, with respect to any claims based on facts or conditions that occurred prior to expiration or termination.

18. Limitation of Liability. NOTWITHSTANDING ANYTHING TO THE CONTRARY, IN NO EVENT SHALL COMPANY BE LIABLE FOR ANY SPECIAL, INCIDENTAL, INDIRECT CONSEQUENTIAL, OR PUNITIVE OR EXEMPLARY DAMAGES (INCLUDING WITHOUT LIMITATION BUSINESS INTERRUPTION, LOST DATA, LOST REVENUE, LOST PROFITS, LOST DOLLAR SAVINGS, OR LOST ENERGY USE SAVINGS, EVEN IF A PARTY HAS BEEN ADVISED OF SUCH POSSIBLE DAMAGES OR IF SAME WERE REASONABLY FORESEEABLE AND REGARDLESS OF WHETHER THE CAUSE OF ACTION IS FRAMED IN CONTRACT, NEGLIGENCE, ANY OTHER TORT, WARRANTY, STRICT LIABILITY, OR PRODUCT LIABILITY). In no event will Company's liability in connection with the provision of products or services or otherwise under this Agreement exceed the entire amount paid to Company by Customer under this Agreement.

19. COVID-19 LIMITATION ON LIABILITY

The transmission of COVID-19 may occur in a variety of ways and circumstances, many of the aspects of which are currently not known. HVAC systems, products, services and other offerings have not been tested for their effectiveness in reducing the spread of COVID-19, including through the air in closed environments. **IN NO EVENT WILL TRANE BE LIABLE UNDER THIS AGREEMENT OR OTHERWISE FOR ANY ACTION OR CLAIM, WHETHER BASED ON WARRANTY, CONTRACT, TORT OR OTHERWISE, FOR ANY BODILY INJURY (INCLUDING DEATH) OR ANY OTHER LIABILITIES, DAMAGES OR COSTS RELATED TO COVID-19 (INCLUCING THE SPREAD, TRANSMISSION OR CONTAMINATION THEREOF) (COLLECTIVELY, "COVID-19 LIABILITIES") AND CUSTOMER HEREBY EXPRESSLY RELEASES TRANE FROM ANY SUCH COVID-19 LIABILITIES.**

20. Patent Indemnity. Company shall protect and indemnify Customer from and against all claims, damages, judgments and loss arising from infringement or alleged infringement of any United States patent by any of the goods manufactured by Company and delivered hereunder, provided that in the event of suit or threat of suit for patent infringement, Company shall promptly be notified and given full opportunity to negotiate a settlement. Company does not warrant against infringement by reason of Customer's design of the articles or the use thereof in combination with other materials or in the operation of any process. In the event of litigation, Customer agrees to reasonably cooperate with Company. In connection with any proceeding under the provisions of this Section, all parties concerned shall be entitled to be represented by counsel at their own expense.

21. Limited Warranty. Company warrants for a period of 12 months from the date of substantial completion ("Warranty Period") commercial equipment manufactured and installed by Company against failure due to defects in material and manufacture and that the labor/labour furnished is warranted to have been properly performed (the "Limited Warranty"). Trane equipment sold on an uninstalled basis is warranted in accordance with Company's standard warranty for supplied equipment. **Product manufactured by Company that includes required startup and is sold in North America will not be warranted by Company unless Company performs the product start-up**. Substantial completion shall be the earlier of the date that the Work is sufficiently complete so that the Work can be utilized for its intended use or the date that Customer receives beneficial use of the Work. If such defect is discovered within the Warranty Period, Company will correct the defect or furnish replacement equipment (or, at its option, parts therefor) and, if said equipment was installed pursuant hereto, labor/labour associated with the replacement of parts or equipment not conforming to this Limited Warranty. Defects must be reported to Company within the Warranty Period. Exclusions from this Limited Warranty include damage or failure arising from: wear and tear; corrosion, erosion, deterioration; Customer's failure to follow the Company-provided maintenance plan; refrigerant not supplied by Trane; and modifications made by others to Company's equipment. Company shall not be obligated to pay for the cost of lost refrigerant. Notwithstanding the foregoing, all warranties provided herein terminate upon termination or cancellation of this Agreement. No warranty liability whatsoever shall attach to Company until the Work has been paid for in full and then said liability shall be limited to the lesser of Company's cost to correct the defective Work and/or the purchase price of the equipment shown to be defective. Equipment, material and/or parts that are not manufactured by Company are not warranted by Company and have such warranties as may be extended by the respective manufacturer. **THE WARRANTY AND LIABILITY SET FORTH IN THIS AGREEMENT ARE IN LIEU OF ALL OTHER WARRANTIES AND LIABILITIES, WHETHER IN CONTRACT OR IN NEGLIGENCE, EXPRESS OR IMPLIED, IN LAW OR IN FACT, INCLUDING IMPLIED WARRANTIES OF**

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MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE AND/OR OTHERS ARISING FROM COURSE OF DEALING OR TRADE. COMPANY MAKES NO REPRESENTATION OR WARRANTY OF ANY KIND, INCLUDING WARRANTY OF MERCHANTABILITY OR FITNESS FOR PARTICULAR PURPOSE, IS MADE REGARDING PREVENTING, ELIMINATING, REDUCING OR INHIBITING ANY MOLD, FUNGUS, BACTERIA, VIRUS, MICROBIAL GROWTH, OR ANY OTHER CONTAMINANTS (INCLUDING COVID-19 OR ANY SIMILAR VIRUS) (COLLECTIVELY, "CONTAMINANTS"), WHETHER INVOLVING OR IN CONNECTION WITH EQUIPMENT, ANY COMPONENT THEREOF, SERVICES OR OTHERWISE. IN NO EVENT SHALL TRANE HAVE ANY LIABILITY FOR THE PREVENTION, ELIMINATION, REDUCTION OR INHIBITION OF THE GROWTH OR SPREAD OF SUCH CONTAMINANTS INVOLVING OR IN CONNECTION WITH ANY EQUIPMENT, ANY COMPONENT THEREOF, SERVICES OR OTHERWISE AND CUSTOMER HEREBY SPECIFICALLY ACKNOWLDGES AND AGREES THERETO.

22. Insurance. Company agrees to maintain the following insurance while the Work is being performed with limits not less than shown below and will, upon request from Customer, provide a Certificate of evidencing the following coverage:

Commercial General Liability	$2,000,000 per occurrence
Automobile Liability	$2,000,000 CSL
Workers Compensation	Statutory Limits

If Customer has requested to be named as an additional insured under Company's insurance policy, Company will do so but only subject to Company's manuscript additional insured endorsement under its primary Commercial General Liability policies. In no event does Company waive its right of subrogation.

23. Commencement of Statutory Limitation Period. Except as to warranty claims, as may be applicable, any applicable statutes of limitation for acts or failures to act shall commence to run, and any alleged cause of action stemming therefrom shall be deemed to have accrued, in any and all events not later than the last date that Company or its subcontractors physically performed work on the project site.

24. General. Except as provided below, to the maximum extent provided by law, this Agreement is made and shall be interpreted and enforced in accordance with the laws of the state or province in which the Work is performed, without regard to choice of law principles which might otherwise call for the application of a different state's or province's law. Any dispute arising under or relating to this Agreement that is not disposed of by agreement shall be decided by litigation in a court of competent jurisdiction located in the state or province in which the Work is performed. Any action or suit arising out of or related to this Agreement must be commenced within one year after the cause of action has accrued. To the extent the Work site is owned and/or operated by any agency of the Federal Government, determination of any substantive issue of law shall be according to the Federal common law of Government contracts as enunciated and applied by Federal judicial bodies and boards of contract appeals of the Federal Government. This Agreement contains all of the agreements, representations and understandings of the parties and supersedes all previous understandings, commitments or agreements, oral or written, related to the subject matter hereof. This Agreement may not be amended, modified or terminated except by a writing signed by the parties hereto. No documents shall be incorporated herein by reference except to the extent Company is a signatory thereon. If any term or condition of this Agreement is invalid, illegal or incapable of being enforced by any rule of law, all other terms and conditions of this Agreement will nevertheless remain in full force and effect as long as the economic or legal substance of the transaction contemplated hereby is not affected in a manner adverse to any party hereto. Customer may not assign, transfer, or convey this Agreement, or any part hereof, or its right, title or interest herein, without the written consent of the Company. Subject to the foregoing, this Agreement shall be binding upon and inure to the benefit of Customer's permitted successors and assigns. This Agreement may be executed in several counterparts, each of which when executed shall be deemed to be an original, but all together shall constitute but one and the same Agreement. A fully executed facsimile copy hereof or the several counterparts shall suffice as an original.

25. Equal Employment Opportunity/Affirmative Action Clause. Company is a federal contractor that complies fully with Executive Order 11246, as amended, and the applicable regulations contained in 41 C.F.R. Parts 60-1 through 60-60, 29 U.S.C. Section 793 and the applicable regulations contained in 41 C.F.R. Part 60-741; and 38 U.S.C. Section 4212 and the applicable regulations contained in 41 C.F.R. Part 60-250 Executive Order 13496 and Section 29 CFR 471, appendix A to subpart A, regarding the notice of employee rights in the United States and with Canadian Charter of Rights and Freedoms Schedule B to the Canada Act 1982 (U.K.) 1982, c. 11 and applicable Provincial Human Rights Codes and employment law in Canada.

26. U.S. Government Work.

The following provision applies only to direct sales by Company to the US Government. The Parties acknowledge that all items or services ordered and delivered under this Agreement are Commercial Items as defined under Part 12 of the Federal Acquisition Regulation (FAR). In particular, Company agrees to be bound only by those Federal contracting clauses that apply to "commercial" suppliers and that are contained in FAR 52.212-5(e)(1). Company complies with 52.219-8 or 52.219-9 in its service and installation contracting business.

The following provision applies only to indirect sales by Company to the US Government. As a Commercial Item Subcontractor, Company accepts only the following mandatory flow down provisions in effect as of the date of this subcontract: 52.203-19; 52.204-21; 52.204-23; 52.219-8; 52.222-21; 52.222-26; 52.222-35; 52.222-36; 52.222-50; 52.225-26; 52.247-64. If the Work is in connection with a U.S. Government contract, Customer certifies that it has provided and will provide current, accurate, and complete information, representations and certifications to all government officials, including but not limited to the contracting officer and officials of the Small Business Administration, on all matters related to the prime contract, including but not limited to all aspects of its ownership, eligibility, and performance. Anything herein notwithstanding, Company will have no obligations to Customer unless and until Customer provides Company with a true, correct and complete executed copy of the prime contract. Upon request, Customer will provide copies to Company of all requested written communications with any government official related to the prime contract prior to or concurrent with the execution thereof, including but not limited to any communications related to Customer's ownership, eligibility or performance of the prime contract. Customer will obtain written authorization and approval from Company prior to providing any government official any information about Company's performance of the work that is the subject of the Proposal or this Agreement, other than the Proposal or this Agreement.

27. Limited Waiver of Sovereign Immunity. If Customer is an Indian tribe (in the U.S.) or a First Nation or Band Council (in Canada), Customer, whether acting in its capacity as a government, governmental entity, a duly organized corporate entity or otherwise, for itself and for its agents, successors, and assigns: (1) hereby provides this limited waiver of its sovereign immunity as to any damages, claims, lawsuit, or cause of action (herein "Action") brought against Customer by Company and arising or alleged to arise out of the furnishing by Company of any product or service under this Agreement, whether such Action is based in contract, tort, strict liability, civil liability or any other legal theory; (2) agrees that jurisdiction and venue for any such Action shall be proper and valid (a) if Customer is in the U.S., in any state or United States court located in the state in which Company is performing this Agreement or (b) if Customer is in Canada, in the superior court of the province or territory in which the work was performed; (3) expressly consents to such Action, and waives any objection to jurisdiction or venue; (4) waives any requirement of exhaustion of tribal court or administrative remedies for any Action arising out of or related to this Agreement; and (5) expressly acknowledges and agrees that Company is not subject to the jurisdiction of Customer's tribal court or any similar tribal forum, that Customer will not bring any action against Company in tribal court, and that Customer will not avail itself of any ruling or direction of the tribal court permitting or directing it to suspend its payment or other obligations under this Agreement. The individual signing on behalf of Customer warrants and represents that such individual is duly authorized to provide this waiver and enter into this Agreement and that this Agreement constitutes the valid and legally binding obligation of Customer, enforceable in accordance with its terms.

1-26.251-10(0720)
Supersedes 1-26.251-10(0620)

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Confidential and Proprietary Information of Trane U.S. Inc.

Proposal

(Valid for 30 days from Proposal date)

PROPRIETARY AND CONFIDENTIAL PROPERTY OF Trane U.S. Inc.

DISTRIBUTION TO OTHER THAN THE NAMED RECIPIENT IS PROHIBITED

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Prepared For:
Marion County

Date: November 4, 2021

Proposal Number: Y2-87473-8

Job Name:
Marion County Courthouse - SN C99J18966M

Omnia/US Communities Quote (USC 15-JLP-023):
14-674126-21-007

Delivery Terms:
Freight Allowed and Prepaid - F.O.B. Jobsite

Payment Terms:
Net 30 Days

Trane U.S. Inc. is pleased to provide the following proposal for your review and approval.

Tag Data - Commercial Rooftop Air Conditioning Units (Midrange) (Qty: 1)

Item	Tag(s)	Qty	Description	Model Number
A1	AC-4	1	20-75 Ton Packaged Industrial Rooftop	SFHLF404P

High Efficiency Unit
DX Cooling with natural gas heat
R-410A refrigerant
40 Ton unit
460 Volt-60 Hertz-3 Phase
4:1 Modulating high gas heat capacity
100% Exhaust – 7.5 HP with Statitrac building pressure control
Exhaust/return fan @ 600 rpm
0-100% Economizer
Economizer control w/ reference enthalpy
2.00" Spring isolators
2" Pre-filter and 4" Deep filter rack, 1 set of throwaway filters
20 HP Supply Fan @ 1100 rpm
VAV (DTC) with supply & exhaust/return VFD with bypass
Standard ambient control
UL Approval
Non-fused unit disconnect switch
Utra Low leak outside air dampers
eFlex Variable speed compressor
IntelliPak replacement unit Custom Built To Fit Existing Curb
Hinged access doors
BACnet communication interface module
Factory-powered 15A GFI Convenience outlet
Temperature Sensor (Fld)
Startup Included - Trane Service must start equipment for warranty to be honored
Heat Recovery, EA and OA Coils, Field Piped, Backdraft Damper on EA, Hood with Filters on OA (Fld)
1st Year Parts, Refrigerant, and Labor warranty

Tag Data - Commercial Rooftop Air Conditioning Units (Large) (Qty: 3)

Item	Tag(s)	Qty	Description	Model Number
B1	AC-1	1	90-130 ton Packaged Industrial Rooftop (	SFHKC904P
B2	AC-2	1	90-130 ton Packaged Industrial Rooftop (	SFHKC904P
B3	AC-3	1	90-130 ton Packaged Industrial Rooftop (	SFHKD124P

All Units

DX Cooling, natural gas heat
R-410A refrigerant
Custom IntelliPak replacement unit, Exact Like for Like
460 Volt-60 Hertz-3 Phase
4:1 Modulating gas heat
2" Pre-filter and 4" Deep filter rack, 1 set of throwaway filters
0-100% Economizer
Econ control w/ reference enthalpy
Ultra low leak dampers (AMCA 511 Class 1A) with fault detection & diagnostics
VAV (DTC) with supply & exhaust VFD with bypass
UL Approval
Non-fused unit disconnect switch
Hinged access doors
Bacnet communication interface module
Factory - powered 15A GFI Convenience outlet
Spring isolators
Startup Included - Trane Service must start equipment for warranty to be honored
Temperature Sensor (Fld)
1st Year Parts, Refrigerant, and Labor warranty

Item: B1 Qty: 1 Tag(s): AC-1

90 Ton unit
100% Exhaust - 25 hp @ 700 rpm with Statitrac building pressure control
60 hp (2-30 hp Motors) Supply motors @ 1600 rpm
High efficiency and capacity evaporator coil & high efficiency condenser coil

Item: B2 Qty: 1 Tag(s): AC-2

90 Ton unit
100% Exhaust - 40 hp @ 800 rpm with Statitrac building pressure control
80 hp (2-40 hp Motors) Supply motors @ 1600 rpm
High efficiency and capacity evaporator coil & high efficiency condenser coil

Item: B3 Qty: 1 Tag(s): AC-3

115 Ton unit
100% Exhaust - 40 hp @ 800 rpm with Statitrac building pressure control
80 hp (2-40 hp Motors) Supply motors @ 1600 rpm

Items A, B

Notes:

1 - Confirm BAS comm. selections before ordering.
2 - **Less (or by others):** smoke detector, spare filters/belts/sheaves ext, external vibration isolation, seismic calcs/restraints/stamps, curb insulation, storage, rigging, installation, commissioning, balancing.

Tag Data - Smoke Detectors (Qty: 4)

Item	Tag(s)	Qty
Z1	No Tag	4

Provided by Salem Fire Alarm

Pricing for Purchase within 30 days and shipment no later than May 2022.
Custom Replacement Intellipaks (fit existing curbs)
Total Net Price Items A, B.....$ 633,531
ADD 5 Year Parts, Labor, and Refrigerant Warranty (1 year in base bid).....$ 57,494

COVID-19 NATIONAL EMERGENCY CLAUSE

The parties agree that they are entering into this Agreement while the nation is in the midst of a national emergency due to the Covid-19 pandemic ("Covid-19 Pandemic"). With the continued existence of Covid-19 Pandemic and the evolving guidelines and executive orders, it is difficult to determine the impact of the Covid-19 Pandemic on Trane's performance under this Agreement. Consequently, the parties agree as follows:

1. Each party shall use commercially reasonable efforts to perform its obligations under the Agreement and to meet the schedule and completion dates, subject to provisions below;
2. Each party will abide by any federal, state (US), provincial (Canada) or local orders, directives, or advisories regarding the Covid-19 Pandemic with respect to its performance of its obligations under this Agreement and each shall have the sole discretion in determining the appropriate and responsible actions such party shall undertake to so abide or to safeguard its employees, subcontractors, agents and suppliers;
3. Each party shall use commercially reasonable efforts to keep the other party informed of pertinent updates or developments regarding its obligations as the Covid-19 Pandemic situation evolves; and
4. If Trane's performance is delayed or suspended as a result of the Covid-19 Pandemic, Trane shall be entitled to an equitable adjustment to the project schedule and/or the contract price.

This proposal is subject to your acceptance of the attached Trane terms and conditions (Equipment).

CUSTOMER ACCEPTANCE	TRANE ACCEPTANCE Trane U.S. Inc.
_____ Authorized Representative	_____ Submitted By: David Strasser Cell: (503) 602-8969 DStrasser@Trane.com
_____ Printed Name	
_____ Title	_____ Authorized Representative
Purchase Order _____	_____ Title
Acceptance Date _____	_____ Signature Date

BS-4275-21 | Trane US |
MC Courthouse Square Rooftop HVAC Replacement

MARION COUNTY SIGNATURE

BOARD OF COMMISSIONERS:

_____

Chair Date

_____

Commissioner Date

_____

Commissioner Date

Authorized Signature: _____

Department Director or designee Date

Authorized Signature: _____

Chief Administrative Officer Date

Reviewed by Signature: _____

Marion County Legal Counsel Date

Reviewed by Signature: _____

Marion County Contracts & Procurement Date

TERMS AND CONDITIONS - COMMERCIAL EQUIPMENT
"Company" shall mean Trane U.S. Inc..

1. Acceptance. These terms and conditions are an integral part of Company's offer and form the basis of any agreement (the "Agreement") resulting from Company's proposal (the "Proposal") for the sale of the described commercial equipment and any ancillary services (the "Equipment"). COMPANY'S TERMS AND CONDITIONS ARE SUBJECT TO PERIODIC CHANGE OR AMENDMENT. The Proposal is subject to acceptance in writing by the party to whom this offer is made or an authorized agent ("Customer") delivered to Company within 30 days from the date of the Proposal. If Customer accepts the Proposal by placing an order, without the addition of any other terms and conditions of sale or any other modification, Customer's order shall be deemed acceptance of the Proposal subject to Company's terms and conditions. If Customer's order is expressly conditioned upon Company's acceptance or assent to terms and/or conditions other than those expressed herein, return of such order by Company with Company's terms and conditions attached or referenced serves as Company's notice of objection to Customer's terms and as Company's counter-offer to provide Equipment in accordance with the Proposal and the Company's terms and conditions. If Customer does not reject or object in writing to Company within 10 days, Company's counter-offer will be deemed accepted. Customer's acceptance of the Equipment will in any event constitute an acceptance by Customer of Company's terms and conditions. This Agreement is subject to credit approval by Company. Upon disapproval of credit, Company may delay or suspend performance or, at its option, renegotiate prices and/or terms and conditions with Customer. If Company and Customer are unable to agree on such revisions, this Agreement shall be cancelled without any liability.

2. Connected Services. In addition to these terms and conditions, the Connected Services Terms of Service ("Connected Services Terms"), available at https://www.trane.com/TraneConnectedServicesTerms, as updated from time to time, are incorporated herein by reference and shall apply to the extent that Company provides Customer with Connected Services, as defined in the Connected Services Terms.

3. Title and Risk of Loss. All Equipment sales with destinations to Canada or the U.S. shall be made as follows: FOB Company's U.S. manufacturing facility or warehouse (full freight allowed). Title and risk of loss or damage to Equipment will pass to Customer upon tender of delivery of such to carrier at Company's U.S. manufacturing facility or warehouse.

4. Pricing and Taxes. Following acceptance without addition of any other terms and condition of sale or any other modification by Customer, the prices stated are firm provided that notification of release for immediate production and shipment is received at Company's factory not later than 3 months from order acceptance. If such release is received later than 3 months from order acceptance date, prices will be increased a straight 1% (not compounded) for each 1 month period (or part thereof) beyond the 3 month firm price period up to the date of receipt of such release. If such release is not received within 6 months after the date of order acceptance, the prices are subject to renegotiation or at Company's option, the order will be cancelled. Any delay in shipment caused by Customer's actions will subject prices to increase equal to the percentage increase in list prices during that period of delay and Company may charge Customer with incurred storage fees. In no event will prices be decreased. The price of Equipment does not include any present or future foreign, federal, state, or local property, license, privilege, sales, use, excise, value added, gross receipts or other like taxes or assessments. Such amounts will be itemized separately to Customer, who will make prompt payment to Company. Company will accept valid exemption documentation for such from Customer, if applicable. All prices include packaging in accordance with Company's standard procedures. Charges for special packaging, crating or packing are the responsibility of Customer.

5. Delivery and Delays. Delivery dates are approximate and not guaranteed. Company will use commercially reasonable efforts to deliver the Equipment on or before the estimated delivery date will notify Customer if the estimated delivery dates cannot be honored, and will deliver the Equipment and services as soon as practicable thereafter. In no event will Company be liable for any damages or expenses caused by delays in delivery.

6. Performance. Company shall be obligated to furnish only the Equipment described in the Proposal and in submittal data (if such data is issued in connection with the order). Company may rely on the acceptance of the Proposal, and in submittal data as acceptance of the suitability of the Equipment for the particular project or location. Unless specifically stated in the Proposal, compliance with any local building codes or other laws or regulations relating to specifications or the location, use or operation of the Equipment is the sole responsibility of Customer. If Equipment is tendered that does not fully comply with the provisions of this Agreement, and Equipment is rejected by Customer, Company will have the right to cure within a reasonable time after notice thereof by substituting a conforming tender whether or not the time for performance has passed.

7. Force Majeure. Company's duty to perform under this Agreement and the Equipment prices are contingent upon the non-occurrence of an Event of Force Majeure. If the Company shall be unable to carry out any material obligation under this Agreement due to an Event of Force Majeure, this Agreement shall at Company's election (i) remain in effect but Company's obligations shall be suspended until the uncontrollable event terminates or (ii) be terminated upon 10 days notice to Customer, in which event Customer shall pay Company for all parts of the Work furnished to the date of termination. An "Event of Force Majeure" shall mean any cause or event beyond the control of Company. Without limiting the foregoing, "Event of Force Majeure" includes: acts of God; acts of terrorism, war or the public enemy; flood; earthquake; tornado; storm; fire; civil disobedience; pandemic insurrections; riots; labor/labour disputes; labor/labour or material shortages; sabotage; restraint by court order or public authority (whether valid or invalid); and action or non-action by or inability to obtain or keep in force the necessary governmental authorizations, permits, licenses, certificates or approvals if not caused by Company; and the requirements of any applicable government in any manner that diverts either the material or the finished product to the direct or indirect benefit of the government.

8. Limited Warranty. Company warrants the Equipment manufactured by Company for a period of the lesser of 12 months from initial start-up or 18 months from date of shipment, whichever is less, against failure due to defects in material and manufacture and that it has the capacities and ratings set forth in Company's catalogs and bulletins ("Warranty"). **Equipment manufactured by Company that includes required start-up and sold in North America will not be warranted by Company unless Company performs the Equipment startup.** Exclusions from this Warranty include damage or failure arising from: wear and tear; corrosion, erosion, deterioration; modifications made by others to the Equipment; repairs or alterations by a party other than Company that adversely affects the stability or reliability of the Equipment; vandalism; neglect; accident; adverse weather or environmental conditions; abuse or improper use; improper installation; commissioning by a party other than Company; unusual physical or electrical or mechanical stress; operation with any accessory, equipment or part not specifically approved by Company; refrigerant not supplied by Company; and/or lack of proper maintenance as recommended by Company. Company shall not be obligated to pay for the cost of lost refrigerant or lost product. Company's obligations and liabilities under this Warranty are limited to furnishing replacement equipment or parts, at its option, FCA (Incoterms 2000) factory or warehouse (f.o.b. factory or warehouse for US domestic purposes) at Company-designated shipping point, freight-allowed to Company's warranty agent's stock location, for all non-conforming Company-manufactured Equipment (which have been returned by Customer to Company. Returns must have prior written approval by Company and are subject to restocking charge where applicable. Equipment, material and/or parts that are not manufactured by Company are not warranted by Company and have such warranties as may be extended by the respective manufacturer. **COMPANY MAKES NO REPRESENTATION OR WARRANTY, OF ANY KIND, INCLUDING WARRANTY OF MERCHANTABILITY OR FITNESS FOR PARTICULAR PURPOSE, IS MADE REGARDING PREVENTING, ELIMINATING, REDUCING OR INHIBITING ANY MOLD, FUNGUS, BACTERIA, VIRUS, MICROBIAL GROWTH, OR ANY OTHER CONTAMINANTS (INCLUDING COVID-19 OR ANY SIMILAR VIRUS) (COLLECTIVELY, "CONTAMINANTS"), WHETHER INVOLVING OR IN CONNECTION WITH EQUIPMENT, ANY COMPONENT THEREOF, SERVICES OR OTHERWISE. IN NO EVENT SHALL TRANE HAVE ANY LIABILITY FOR THE PREVENTION, ELIMINATION, REDUCTION OR INHIBITION OF THE GROWTH OR SPREAD OF SUCH CONTAMINANTS INVOLVING OR IN CONNECTION WITH ANY EQUIPMENT, ANY COMPONENT THEREOF, SERVICES OR OTHERWISE AND CUSTOMER HEREBY SPECIFICALLY ACKNOWLDGES AND AGREES THERETO.** No warranty liability whatsoever shall attach to Company until Customer's complete order has been paid for in full and Company's liability under this Warranty shall be limited to the purchase price of the Equipment shown to be defective. Additional warranty protection is available on an extra-cost basis and must be in writing and agreed to by an authorized signatory of the Company. **EXCEPT FOR COMPANY'S WARRANTY**

EXPRESSLY SET FORTH HEREIN, COMPANY DOES NOT MAKE, AND HEREBY EXPRESSLY DISCLAIMS, ANY WARRANTIES, EXPRESS OR IMPLIED CONCERNING ITS PRODUCTS, EQUIPMENT OR SERVICES, INCLUDING, WITHOUT LIMITATION, ANY WARRANTY OF DESIGN, MERCHANTABILITY OR OF FITNESS FOR A PARTICULAR PURPOSE, OR OTHERS THAT ARE ALLEGED TO ARISE FROM COURSE OF DEALING OR TRADE.

9. Indemnity. To the fullest extent permitted by law, Company and Customer shall indemnify, defend and hold harmless each other from any and all claims, actions, costs, expenses, damages and liabilities, including reasonable attorneys' fees, resulting from death or bodily injury or damage to real or personal property, to the extent caused by the negligence or misconduct of their respective employees or other authorized agents in connection with their activities within the scope of this Agreement. Neither party shall indemnify the other against claims, damages, expenses or liabilities to the extent attributable to the acts or omissions of the other party. If the parties are both at fault, the obligation to indemnify shall be proportional to their relative fault. The duty to indemnify will continue in full force and effect, notwithstanding the expiration or early termination hereof, with respect to any claims based on facts or conditions that occurred prior to expiration or termination.

10. Insurance. Upon request, Company will furnish evidence of its standard insurance coverage. If Customer has requested to be named as an additional insured under Company's insurance policy, Company will do so but only subject to Company's manuscript additional insured endorsement under its primary Commercial General Liability policies. In no event does Company waive any rights of subrogation.

11. Customer Breach. Each of the following events or conditions shall constitute a breach by Customer and shall give Company the right, without an election of remedies, to terminate this Agreement, require payment prior to shipping, or suspend performance by delivery of written notice: (1) Any failure by Customer to pay amounts when due; or (2) any general assignment by Customer for the benefit of its creditors, or if Customer becomes bankrupt or insolvent or takes the benefit of any statute for bankrupt or insolvent debtors, or makes or proposes to make any proposal or arrangement with creditors, or if any steps are taken for the winding up or other termination of Customer or the liquidation of its assets, or if a trustee, receiver, or similar person is appointed over any of the assets or interests of Customer; (3) Any representation or warranty furnished by Customer in connection with this Agreement is false or misleading in any material respect when made; or (4) Any failure by Customer to perform or comply with any material provision of this Agreement. Customer shall be liable to the Company for all Equipment furnished and all damages sustained by Company (including lost profit and overhead).

12. Limitation of Liability. NOTWITHSTANDING ANYTHING TO THE CONTRARY, IN NO EVENT SHALL COMPANY BE LIABLE FOR ANY SPECIAL, INCIDENTAL, INDIRECT CONSEQUENTIAL, OR PUNITIVE OR EXEMPLARY DAMAGES (INCLUDING WITHOUT LIMITATION REFRIGERANT LOSS, BUSINESS INTERRUPTION, LOST DATA, LOST REVENUE, LOST PROFITS) EVEN IF A PARTY HAS BEEN ADVISED OF SUCH POSSIBLE DAMAGES OR IF SAME WERE REASONABLY FORESEEABLE AND REGARDLESS OF WHETHER THE CAUSE OF ACTION IS FRAMED IN CONTRACT, NEGLIGENCE, ANY OTHER TORT, WARRANTY, STRICT LIABILITY, OR PRODUCT LIABILITY). In no event will Company's liability in connection with the provision of products or services or otherwise under this Agreement exceed the entire amount paid to Company by Customer under this Agreement.

13. COVID-19 LIMITATION ON LIABILITY

The transmission of COVID-19 may occur in a variety of ways and circumstances, many of the aspects of which are currently not known. HVAC systems, products, services and other offerings have not been tested for their effectiveness in reducing the spread of COVID-19, including through the air in closed environments. **IN NO EVENT WILL TRANE BE LIABLE UNDER THIS AGREEMENT OR OTHERWISE FOR ANY ACTION OR CLAIM, WHETHER BASED ON WARRANTY, CONTRACT, TORT OR OTHERWISE, FOR ANY BODILY INJURY (INCLUDING DEATH) OR ANY OTHER LIABILITIES, DAMAGES OR COSTS RELATED TO COVID-19 (INCLUCING THE SPREAD, TRANSMISSION OR CONTAMINATION THEREOF) (COLLECTIVELY, "COVID-19 LIABILITIES") AND CUSTOMER HEREBY EXPRESSLY RELEASES TRANE FROM ANY SUCH COVID-19 LIABILITIES.**

14. Nuclear Liability. In the event that the Equipment sold hereunder is to be used in a nuclear facility, Customer will, prior to such use, arrange for insurance or governmental indemnity protecting Company against all liability and hereby releases and agrees to indemnify Company and its suppliers for any nuclear damage, including loss of use, in any manner arising out of a nuclear incident, whether alleged to be due, in whole or in part to the negligence or otherwise of Company or its suppliers.

15. Intellectual Property; Patent Indemnity. Company retains all ownership, license and other rights to all patents, trademarks, copyrights, trade secrets and other intellectual property rights related to the Equipment, and, except for the right to use the Equipment sold, Customer obtains no rights to use any such intellectual property. Company agrees to defend any suit or proceeding brought against Customer so far as such suit or proceeding is solely based upon a claim that the use of the Equipment provided by Company constitutes infringement of any patent of the United States of America, provided Company is promptly notified in writing and given authority, information and assistance for defense of same. Company will, at its option, procure for Customer the right to continue to use said Equipment, or modify it so that it becomes non-infringing, or replace same with non-infringing Equipment, or to remove said Equipment and to refund the purchase price. The foregoing will not be construed to include any Agreement by Company to accept any liability whatsoever in respect to patents for inventions including more than the Equipment furnished hereunder, or in respect of patents for methods and processes to be carried out with the aid of said Equipment. The provision of Equipment by Company does not convey any license, by implication, estoppel, or otherwise, under patent claims covering combinations of said Equipment with other devices or elements. The foregoing states the entire liability of Company with regard to patent infringement. Notwithstanding the provisions of this paragraph, Customer will hold Company harmless against any expense or loss resulting from infringement of patents or trademarks arising from compliance with Customer's designs or specifications or instructions.

16. Cancellation. Equipment is specially manufactured in response to orders. An order placed with and accepted by Company cannot be delayed, canceled, suspended, or extended except with Company's written consent and upon written terms accepted by Company that will reimburse Company for and indemnify Company against loss and provide Company with a reasonable profit for its materials, time, labor, services, use of facilities and otherwise. Customer will be obligated to accept any Equipment shipped, tendered for delivery or delivered by Company pursuant to the order prior to any agreed delay, cancellation, suspension or extension of the order. Any attempt by Customer to unilaterally revoke, delay or suspend acceptance for any reason whatever after it has agreed to delivery of or accepted any shipment shall constitute a breach of this Agreement. For purposes of this paragraph, acceptance occurs by any waiver of inspection, use or possession of Equipment, payment of the invoice, or any indication of exclusive control exercised by Customer.

17. Invoicing and Payment. Unless otherwise agreed to in writing by Company, equipment shall be invoiced to Customer upon tender of delivery thereof to the carrier. Customer shall pay Company's invoices within net 30 days of shipment date. Company reserves the right to add to any account outstanding for more than 30 days a service charge equal to the lesser of the maximum allowable legal interest rate or 1.5% of the principal amount due at the end of each month. Customer shall pay all costs (including attorneys' fees) incurred by Company in attempting to collect amounts due and otherwise enforcing these terms and conditions. If requested, Company will provide appropriate lien waivers upon receipt of payment. Company may at any time decline to ship, make delivery or perform work except upon receipt of cash payment, letter of credit, or security, or upon other terms and conditions satisfactory to Company. Customer agrees that, unless Customer makes payment in advance, Company will have a purchase money security interest in all Equipment to secure payment in full of all amounts due Company and its order for the Equipment, together with these terms and conditions, form a security agreement (as defined by the UCC in the United States and as defined in the Personal Property Security Act in Canada). Customer shall keep the Equipment free of all taxes and encumbrances, shall not remove the Equipment from its original installation point and shall not assign or transfer any interest in the Equipment until all payments due Company have been made. The purchase money security interest granted herein attaches upon Company's acceptance of Customer's order and on receipt of the Equipment described in the accepted Proposal but prior to its installation. The parties have no agreement to postpone the time for attachment unless specifically noted in writing on the accepted order. Customer will have no rights of set off against any amounts, which become payable to Company under this Agreement or otherwise.

18. Claims. Company will consider claims for concealed shortages in shipments or rejections due to failure to conform to an order only if such claims or rejections are made in writing within 15 days of delivery and are accompanied by the packing list and, if applicable, the reasons in detail why the Equipment does not conform to Customer's order. Upon receiving authorization and shipping instructions from authorized personnel of Company, Customer may return rejected Equipment, transportation charges prepaid, for replacement. Company may charge Customer any costs resulting from the testing, handling, and disposition of any Equipment returned by Customer which are not found by Company to be nonconforming. All Equipment damaged during shipment and all claims relating thereto must be made with the freight carrier in accordance with such carrier's policies and procedures. Claims for Equipment damaged during shipment are not covered under the warranty provision stated herein.

19. Export Laws. The obligation of Company to supply Equipment under this Agreement is subject to the ability of Company to supply such items consistent with applicable laws and regulations of the United States and other governments. Company reserves the right to refuse to enter into or perform any order, and to cancel any order, under this Agreement if Company in its sole discretion determines that performance of the transaction to which such order relates would violate any such applicable law or regulation. Customer will pay all handling and other similar costs from Company's factories including the costs of freight, insurance, export clearances, import duties and taxes. Customer will be "exporter of record" with respect to any export from the United States of America and will perform all compliance and logistics functions in connection therewith and will also comply with all applicable laws, rules and regulations. Customer understands that Company and/or the Equipment are subject to laws and regulations of the United States of America which may require licensing or authorization for and/or prohibit export, re-export or diversion of Company's Equipment to certain countries, and agrees it will not knowingly assist or participate in any such diversion or other violation of applicable United States of America laws and regulations. Customer agrees to hold harmless and indemnify Company for any damages resulting to Customer or Company from a breach of this paragraph by Customer.

20. General. Except as provided below, to the maximum extent provided by law, this Agreement is made and shall be interpreted and enforced in accordance with the laws of the state of New York for Equipment shipped to a U.S. location and the laws of the province to which Equipment is shipped within Canada, without regard to its conflict of law principles that might otherwise call for the application of a different state's or province's law, and not including the United Nations Convention on Contracts for the International Sale of Goods. Any action or suit arising out of or related to this Agreement must be commenced within one year after the cause of action has accrued. To the extent the Equipment is being used at a site owned and/or operated by any agency of the Federal Government, determination of any substantive issue of law shall be according to the Federal common law of Government contracts as enunciated and applied by Federal judicial bodies and boards of contract appeals of the Federal Government. This Agreement contains all of the agreements, representations and understandings of the parties and supersedes all previous understandings, commitments or agreements, oral or written, related to the subject matter hereof. This Agreement may not be amended, modified or terminated except by a writing signed by the parties hereto. No documents shall be incorporated herein by reference except to the extent Company is a signatory thereon. If any term or condition of this Agreement is invalid, illegal or incapable of being enforced by any rule of law, all other terms and conditions of this Agreement will nevertheless remain in full force and effect as long as the economic or legal substance of the transaction contemplated hereby is not affected in a manner adverse to any party hereto. Customer may not assign, transfer, or convey this Agreement, or any part hereof, or its right, title or interest herein, without the written consent of the Company. Subject to the foregoing, this Agreement shall be binding upon and inure to the benefit of Customer's permitted successors and assigns. This Agreement may be executed in several counterparts, each of which when executed shall be deemed to be an original, but all together shall constitute but one and the same Agreement. A fully executed facsimile copy hereof or the several counterparts shall suffice as an original.

21. Equal Employment Opportunity/Affirmative Action Clause. Company is a federal contractor that complies fully with Executive Order 11246, as amended, and the applicable regulations contained in 41 C.F.R. Parts 60-1 through 60-60, 29 U.S.C. Section 793 and the applicable regulations contained in 41 C.F.R. Part 60-741; and 38 U.S.C. Section 4212 and the applicable regulations contained in 41 C.F.R. Part 60-250 Executive Order 13496 and Section 29 CFR 471, appendix A to subpart A, regarding the notice of employee rights in the United States and with Canadian Charter of Rights and Freedoms Schedule B to the Canada Act 1982 (U.K.) 1982, c. 11 and applicable Provincial Human Rights Codes and employment law in Canada.

22. U.S. Government Work.

The following provision applies only to direct sales by Company to the US Government. The Parties acknowledge that Equipment ordered and delivered under this Agreement are Commercial Items as defined under Part 12 of the Federal Acquisition Regulation (FAR). In particular, Company agrees to be bound only by those Federal contracting clauses that apply to "commercial" suppliers and that are contained in FAR 52.212-5(e)(1).

The following provision applies only to indirect sales by Company to the US Government. As a Commercial Item Subcontractor, Company accepts only the following mandatory flow down provisions: 52.219-8; 52.222-26; 52.222-35; 52.222-36; 52.222-39; 52.247-64. If the sale of the Equipment is in connection with a U.S. Government contract, Customer certifies that it has provided and will provide current, accurate, and complete information, representations and certifications to all government officials, including but not limited to the contracting officer and officials of the Small Business Administration, on all matters related to the prime contract, including but not limited to all aspects of its ownership, eligibility, and performance. Anything herein notwithstanding, Company will have no obligations to Customer unless and until Customer provides Company with a true, correct and complete executed copy of the prime contract. Upon request, Customer will provide copies to Company of all requested written communications with any government official related to the prime contract prior to or concurrent with the execution thereof, including but not limited to any communications related to Customer's ownership, eligibility or performance of the prime contract. Customer will obtain written authorization and approval from Company prior to providing any government official any information about Company's performance of the work that is the subject of the Proposal or this Agreement, other than the Proposal or this Agreement.

23. Limited Waiver of Sovereign Immunity. If Customer is an Indian tribe (in the U.S.) or a First Nation or Band Council (in Canada), Customer, whether acting in its capacity as a government, governmental entity, a duly organized corporate entity or otherwise, for itself and for its agents, successors, and assigns: (1) hereby provides this limited waiver of its sovereign immunity as to any damages, claims, lawsuit, or cause of action (herein "Action") brought against Customer by Company and arising or alleged to arise out of the furnishing by Company of any product or service under this Agreement, whether such Action is based in contract, tort, strict liability, civil liability or any other legal theory; (2) agrees that jurisdiction and venue for any such Action shall be proper and valid (a) if Customer is in the U.S., in any state or United States court located in the state in which Company is performing this Agreement or (b) if Customer is in Canada, in the superior court of the province or territory in which the work was performed; (3) expressly consents to such Action, and waives any objection to jurisdiction or venue; (4) waives any requirement of exhaustion of tribal court or administrative remedies for any Action arising out of or related to this Agreement; and (5) expressly acknowledges and agrees that Company is not subject to the jurisdiction of Customer's tribal court or any similar tribal forum, that Customer will not bring any action against Company in tribal court, and that Customer will not avail itself of any ruling or direction of the tribal court permitting or directing it to suspend its payment or other obligations under this Agreement. The individual signing on behalf of Customer warrants and represents that such individual is duly authorized to provide this waiver and enter into this Agreement and that this Agreement constitutes the valid and legally binding obligation of Customer, enforceable in accordance with its terms.

1-26.130-4 (0720)
Supersedes 1-26.130-4 (0620)

Unit Overview

Unit Function	Tonnage	EER @ AHRI	IEER @ AHRI	System Power
SF: Natural Gas Heat	90 Ton	10.8 EER	15.1 EER	124.38 kW

Installed Weight	Elevation
	0.00 ft

Unit Features

Capacity/Efficiency Option	High cap evap coil & high eff cond coil
Filter	High-Efficiency Throwaway Filters
Agency Approval	cULus

Unit Electrical

Voltage/Phase/Frequency	Circuit 1			
	MCA	MOP	DSS	RDE
460/60/3	279.20 A	300.00 A	310.00 A	300.00 A

Condenser Fans FLA	14.40 A
Supply Fan FLA	36.60 A
Exhaust Fan FLA	30.50 A
Other FLA	2.00 A

Compressor 1 RLA	37.20 A
Compressor 1 Count	4.00 Each

Condensing Section

Capacity/Efficiency Option	High cap evap coil & high eff cond coil	**Ambient Dry Bulb**	93.00 F
Refrigerant Charge Circuit 1	64.8 lb	**Outdoor Fan Type**	Prop
Refrigerant Charge Circuit 2	64.8 lb	**Outdoor Fan Drive**	Direct

Heating Section

Function	SF: Natural Gas Heat	**Heating EAT**	70.00 F
Heat Capacity	4:1 Mod. Gas Heat	**Heating LAT**	90.77 F
Input Heating Capacity	1000.00 MBh	**Heating Delta T**	20.77 F
Output Heating Capacity	800.00 MBh		
Output Heating Capacity w/ Fan	916.26 MBh		

Cooling Coil (DX) Section

Evaporator Type	Cu-Al
Evaporator Coil Rows	6.00 Each
Evaporator Face Area	59.30 sq ft
Evaporator Face Velocity	599 ft/min

Inputs	
Design Airflow	35500 cfm
Entering Dry Bulb	77.00 F
Entering Wet Bulb	62.00 F
Entering Relative Humidity	42.65 %

Cooling Performance	
Leaving Coil Dry Bulb	52.17 F
Leaving Coil Wet Bulb	50.89 F
Leaving Unit Dry Bulb	55.66 F
Leaving Unit Wet Bulb	52.44 F
Gross Total Capacity	1110.77 MBh
Gross Sensible Capacity	994.61 MBh
Gross Latent Capacity	116.16 MBh
Net Total Capacity	983.16 MBh
Net Sensible Capacity	867.00 MBh
Net Sensible Heat Ratio (%)	88.19 %

Supply Fan

Supply Fan Type	AF
Supply Fan Count	2
Supply Fan Motor HP	60 Hp (2-30 Hp Motors)
Supply Motor Count	2.00 Each
Supply Fan Motor Drive	1600 rpm
System Control	VAV (DTC) SF & EF/RF VFD w/ Bypass
Isolator Option	Spring isolators

Performance	
Design Airflow	35500 cfm
Supply Duct Static Pressure	2.500 in H2O
Component Static Pressure	2.168 in H2O
Return Duct Static Pressure	1.000 in H2O
Total Static Pressure	5.668 in H2O
Total Supply BHP	45.65 bhp
Operating Speed (RPM)	1366 rpm
Supply Fan Motor Heat	127.61 MBh

Outside Air & Relief Sections

Outside Air Section	
Outside Air Option	0-100% Economizer
Outside Air Control	Econ control w/reference enthalpy
Damper Option	Ultra low leak damper w/ FDD

Relief Section	
Airflow	34800 cfm
Return Duct Static Pressure	1.000 in H2O
Fan Option	100% - 25 Hp w/Statitrac
Actual BHP	24.94 bhp
Operating Speed (RPM)	714 rpm
Motor Drive	700 rpm
Isolator Option	Spring isolators

Acoustics

	63	125	250	500	1K	2K	4K	8K
Discharge Duct	92 dB	88 dB	94 dB	90 dB	86 dB	79 dB	75 dB	69 dB
Return Duct	83 dB	83 dB	87 dB	78 dB	73 dB	69 dB	66 dB	58 dB
Exhaust Fan	89 dB	86 dB	83 dB	83 dB	81 dB	78 dB	74 dB	66 dB

Controls & Service Options

Controls	
Communication Protocol	BACnet communication interface module

Service	
Cabinet Options	Access doors

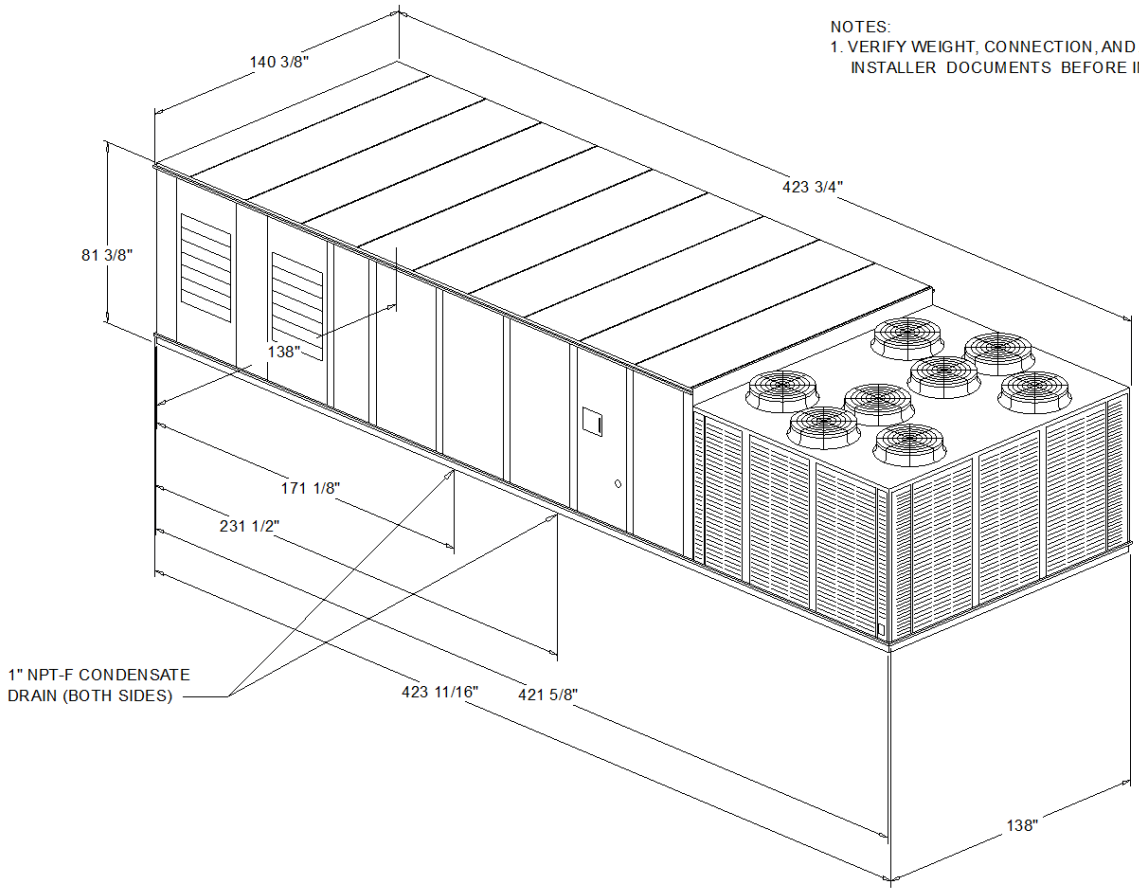
Accessories/Misc.

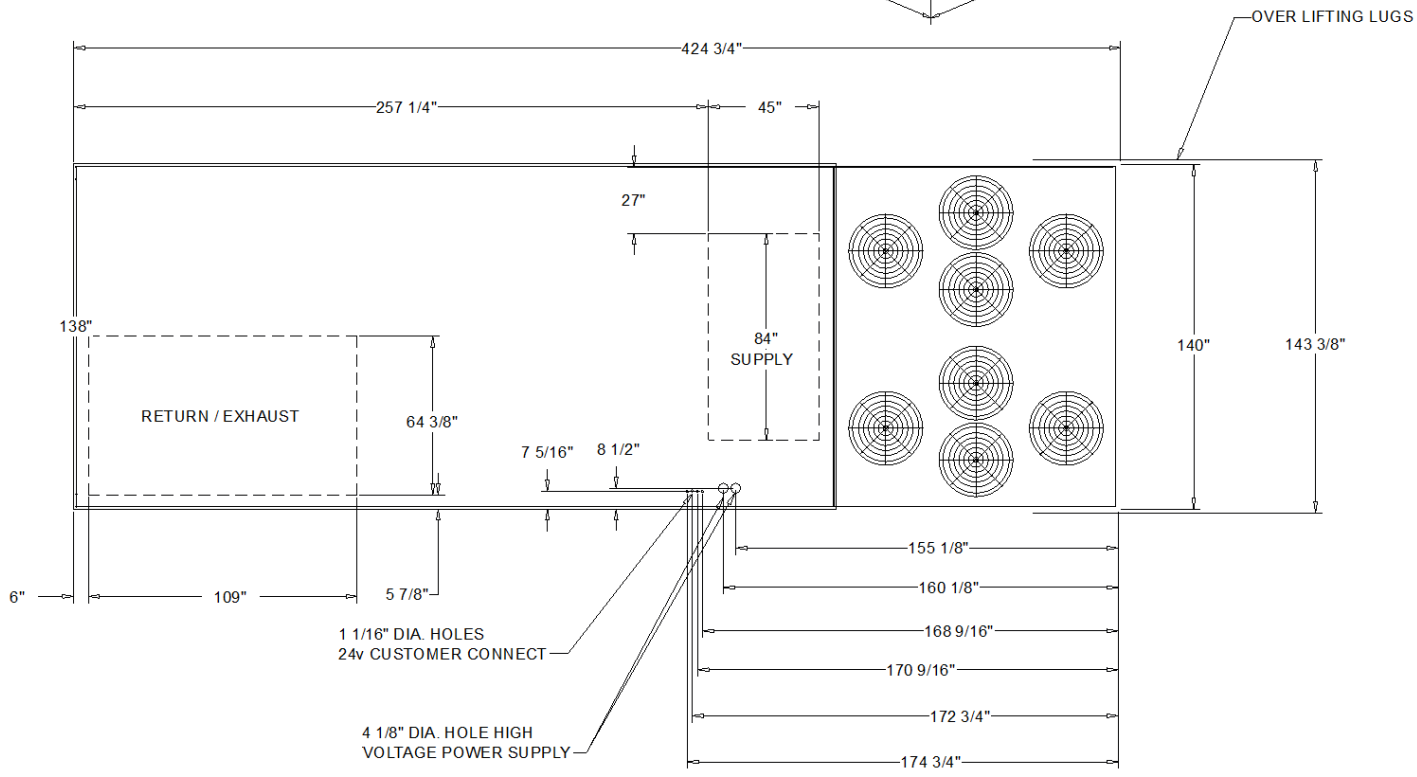
Start Up	Startup

Warranty

Labor Warranty (First Year)	Year 1 Labor Warranty
Refrigerant Warranty (First Year)	1st Year Refrigerant Warranty

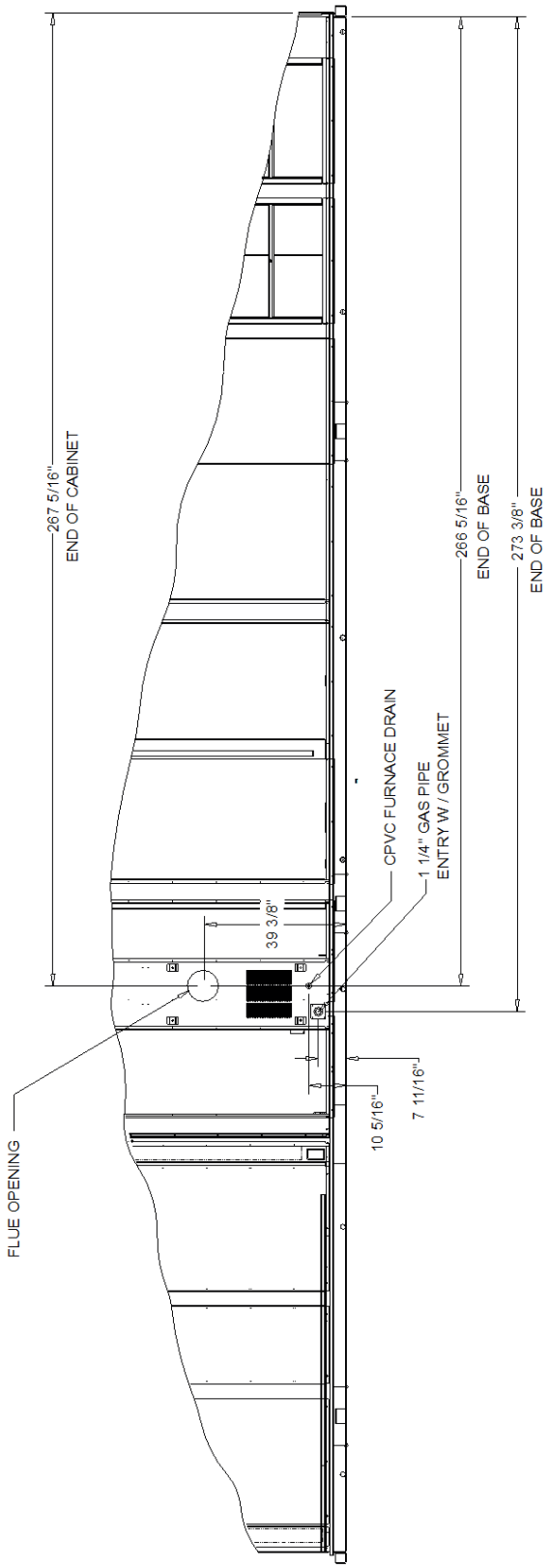
NOTES:
1. VERIFY WEIGHT, CONNECTION, AND ALL DIMENSION WITH INSTALLER DOCUMENTS BEFORE INSTALLATION





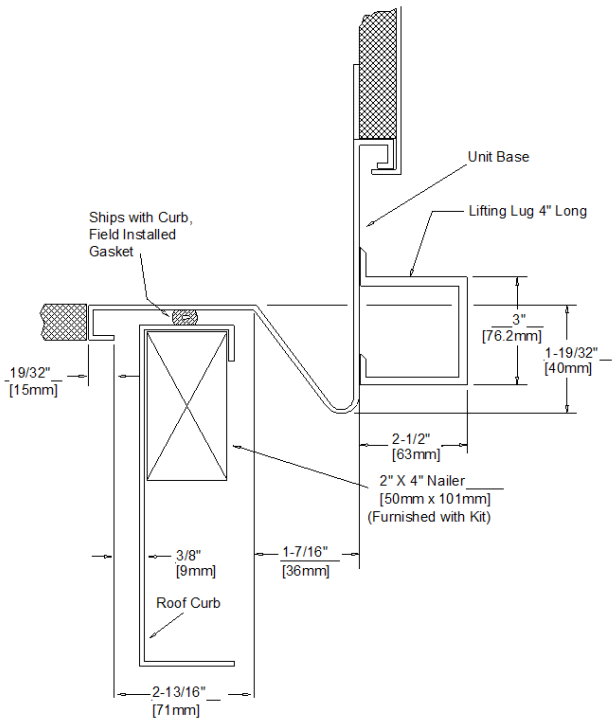
90 - 130 TON SELF- CONTAINED

PLAN VIEW DRAWING

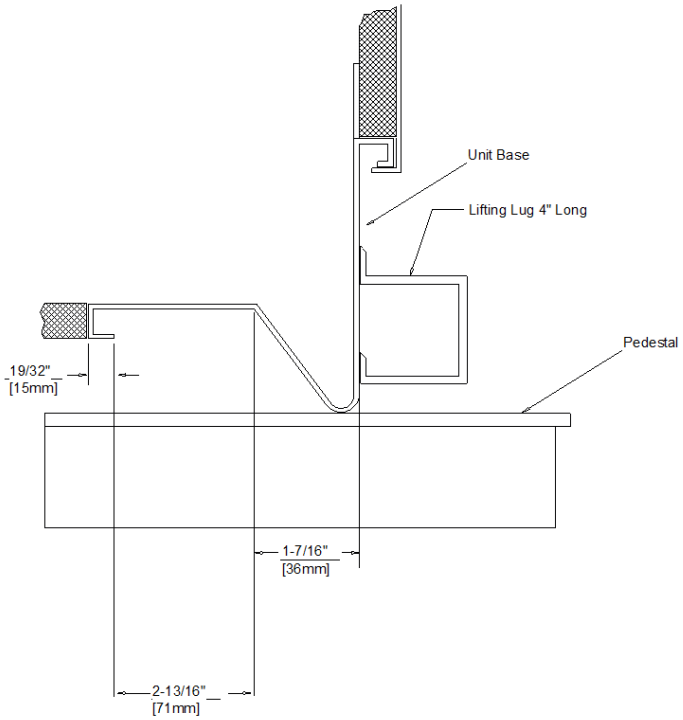


90 - 130 TON GAS HEAT
RIGHT SIDE OF UNIT

TYPICAL ROOF CURB AND BASE PAN DETAIL



TYPICAL PEDESTAL AND BASE PAN DETAIL



ELECTRICAL / GENERAL DATA

GENERAL DATA	
Tonnage:	90
Unit Operating Voltage Range:	414 -506
Unit Primary Voltage:	460
Unit Hertz:	60
Unit Phase:	3
EER	10.8 EER

ELECTRIC HEATER	
Electric Heater kw	
Electric Heater Full Load Amps	

HEATING - PERFORMANCE	
Heat Input:	250-1000
Heat Output:	200-800
Capacity Steps:	4:1

HEATING - GENERAL DATA	
Gas Inlet Pressure (in w.c.):	14.0 w.c. / 7.0 w.c.
Gas Pipe Connection Size:	1 1/4"

COMPRESSOR	Circuit #1	Circuit #2
Number:	2	2
Tons (Each) (5):	20/20	20/20
Compressor Rated Load Amps (Each):	37.20 A	0.00 A
Locked Rotor Amps (Each):	215.0 / 215.0	215.0 / 215.0

SUPPLY FAN MOTOR	
Number:	2
Horsepower (Each):	30.0
Supply Fan Motor Full Load Amps (Each):	36.60 A

EXHAUST FAN MOTOR	
Number:	1
Horsepower (Each):	25.0
Exhaust Fan Motor Full Load Amps (Each):	30.50 A

CONDENSOR FAN MOTOR	
Number:	8
Horsepower (Each):	1.0
Condensor Fan Motor Full Load Amps (Each):	14.40 A

REFRIGERANT	
Refrigeran Type:	R-410A
Factory Charge (Circuit #1) (6):	64.8 lb
Factory Charge (Circuit #2) (6):	64.8 lb

FILTERS - TYPE	
Type:	High Efficiency Rack-less Filter Yes
Furnished:	No
Number:	25
Recommended Size:	24" x 24" x 2"

FINAL FILTERS - TYPE	
Type:	
Furnished:	
Number:	
Recommended Size:	

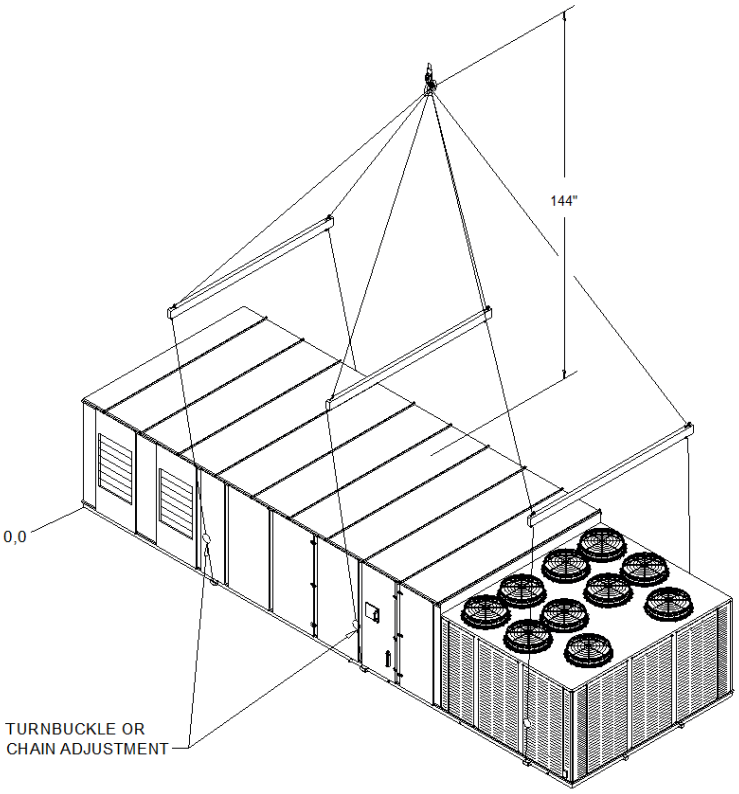
Cooling MCA = (1.25 x LOAD 1) + LOAD 2 + LOAD 4

Cooling MOP= (2.25 x LOAD 1) + LOAD 2 + LOAD 4

Cooling RDE= (1.5 x LOAD 1) + LOAD 2 + LOAD 4

Notes:

1. LOAD 1= Current of the largest motor (Compressor or Fan Motor); LOAD 2=Sum of the currents of all remaining motors
LOAD 3= FLA(Full Load Amps) of the electric heater; LOAD 4= Any other load rated at 1 amp or more.
2. For Electric Heat MCA, MOP, RDE values, calculate for both cooling and heating modes.
3. If selected Max Over Cur is less than the Min Cir Amp, then select the lowest maximum fuse size which is equal to or larger than the Min Cir Amp, provided the selected fuse size does not exceed 800 amps.
4. If the selected Recommended Dual Element fuse size is greater than the selected Max Over Cur Protection value, then select the Recommended Dual Element fuse size value to equal the Max Over Protection value.
5.. Compressor KW at AHRI rating conditions of 80/67 -95
6. Refrigerant charge is an approx. value. For a more precise value, see unit nameplate and service instructions.



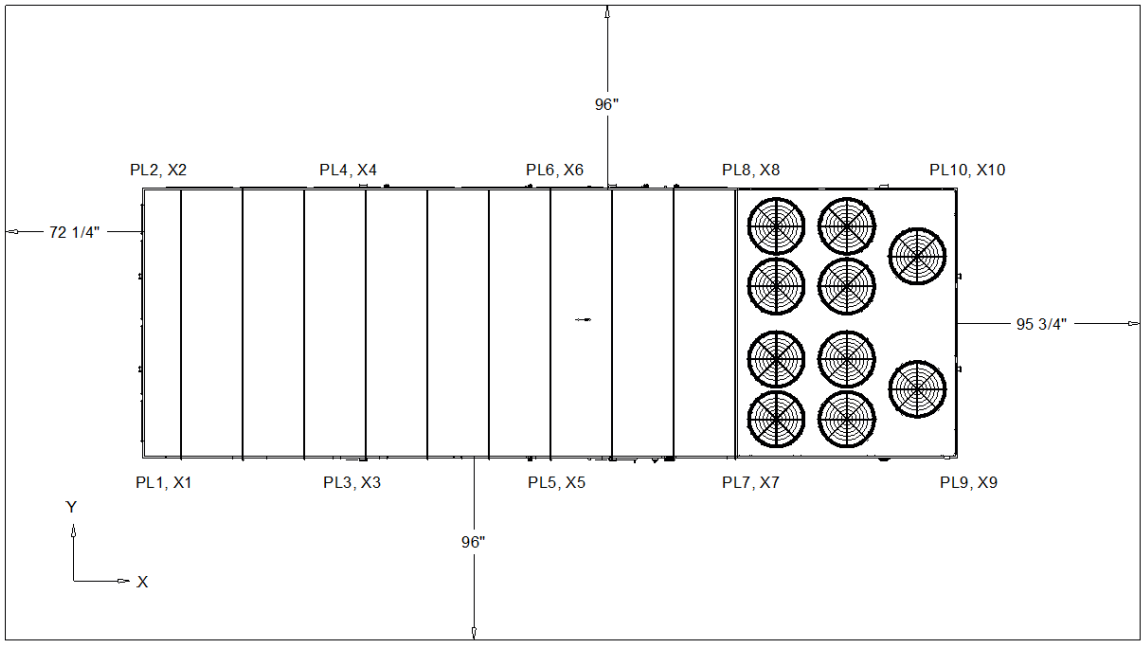
Calculated weight:	N/A	Point Load Location
Point Load 1:	N/A	N/A: N/A
Point Load 2:	N/A	N/A: N/A
Point Load 3:	N/A	N/A: N/A
Point Load 4:	N/A	N/A: N/A
Point Load 5:	N/A	N/A: N/A
Point Load 6:	N/A	N/A: N/A
Point Load 7:	N/A	N/A: N/A
Point Load 8:	N/A	
Point Load 9:	N/A	
Point Load 10:	N/A	
Total Weight:	N/A	
Center f Gravity x:	N/A	
Center of Gravity y:	N/A	

Notes:
1.The actual weight is stamped on the unit nameplate.
2. The weight shown represents the typical unit operating weight for the configuration selected. Estimated at +/- 10% of the nameplate weight.
3. Design special weights are not displayed. Any weight added through COD (Custom Order Design) will not be accounted in the +/- 10% estimate
4. When 2 or more units are to be placed side by side, the distance between the units should be increased to 150% of the recommended single unit clearance. The units should also be staggered to reduce span deflection & assure proper diffusion of exhaust air.

RIGGING

ISOMETRIC VIEW OF UNIT

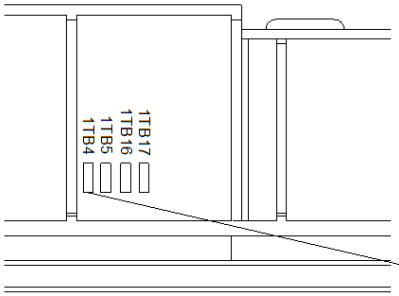
SERVICE CLEARANCE



SERVICE CLEARANCE

CENTER OF GRAVITY AND CLEARANCES

PLAN VIEW OF UNIT



⚠ WARNING

HAZARDOUS VOLTAGE!

DISCONNECT ALL ELECTRIC POWER INCLUDING REMOTE DISCONNECTS BEFORE SERVICING.

FAILURE TO DISCONNECT POWER BEFORE SERVICING CAN CAUSE SEVERE PERSONAL INJURY OR DEATH.

⚠ AVERTISSEMENT

VOLTAGE HASARDEUX!

DECONNECTEZ TOUTES LES SOURCES ELECTRIQUES INCLUANT LES DISJONCTEURS SITUES A DISTANCE AVANT D'EFFECTUER L'ENTRETIEN.

FAUTE DE DECONNECTER LA SOURCE ELECTRIQUE AVANT D'EFFECTUER L'ENTRETIEN PEUT ENTRAINER DES BLESSURES CORPORELLES SEVERES OU LA MORT.

⚠ CAUTION

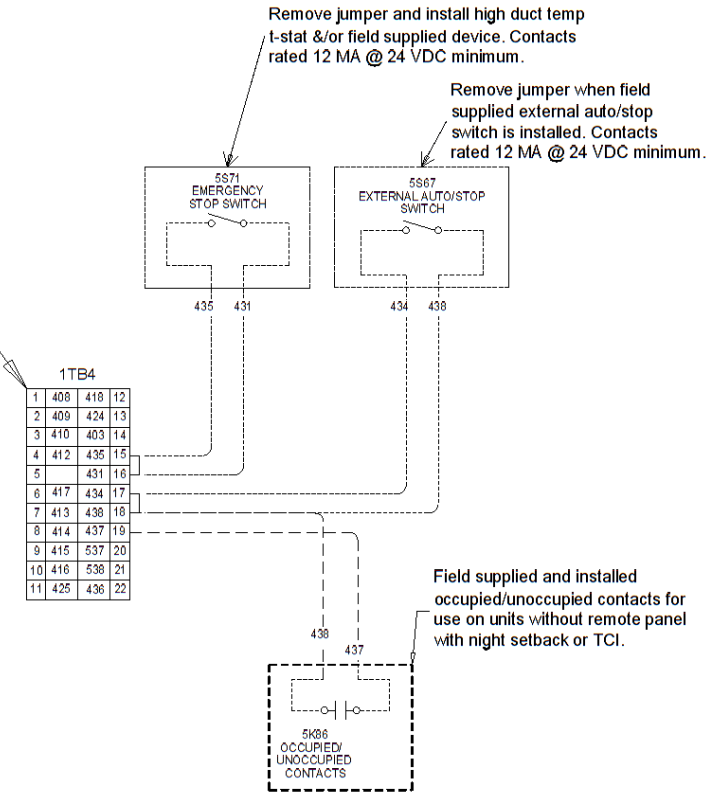
USE COPPER CONDUCTORS ONLY!

UNIT TERMINALS ARE NOT DESIGNED TO ACCEPT OTHER TYPES OF CONDUCTORS.

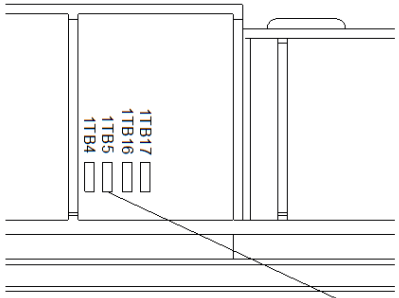
FAILURE TO DO SO MAY CAUSE DAMAGE TO THE EQUIPMENT.

IMPORTANT!
DO NOT ENERGIZE
UNIT UNTIL CHECK-OUT
AND START-UP PROCEDURE
HAS BEEN COMPLETED

DEVICE PREFIX LOCATION CODE	
AREA	LOCATION
1	INSIDE UNIT CONTROL BOX
2	CONDENSER SECTION
3	AIR HANDLER SECTION
4	HEATING SECTION
5	EXTERNAL FIELD MOUNTED DEVICE



Note: All wiring and components shown dashed to be supplied and installed by the customer in accordance with local electrical codes.



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DEVICE PREFIX LOCATION CODE	
AREA	LOCATION
1	INSIDE UNIT CONTROL BOX
2	CONDENSER SECTION
3	AIR HANDLER SECTION
4	HEATING SECTION
5	EXTERNAL FIELD MOUNTED DEVICE

1TB5

1	489	475	12
2	490	476	13
3	523	528	14
4	524	529	15
5	525	530	16
6	526	531	17
7	527	532	18
8	549	533	19
9	550	534	20
10	427	443	21
11	426	444	22

534 533
TRACER COMMUNICATIONS

Required with TCI Module option.
Use shielded twisted pair wire.

Note: All wiring and components shown dashed to be supplied and installed by the customer in accordance with local electrical codes.

Job Name: Marion County Courthouse - SN C99J189966M
Prepared By:
Unit Tag: AC-1
Quantity: 1

General
Units shall be specifically designed for outdoor rooftop installation on a roof curb and be completely factory assembled and tested, piped, internally wired, fully charged with R-410A compressor oil and shipped in one piece. Units shall be available for direct expansion cooling only, or direct expansion cooling with natural gas, electric, hot water or steam heating. Filters, outside air system, exhaust air system, optional non-fused disconnect switches and all operating and safety controls shall be furnished factory installed. All units shall be cULus approved and factory run tested. Cooling capacity shall be rated in accordance with AHRI Standard 360. All units shall have decals and tags to aid in service and indicate caution areas. Electrical diagrams shall be printed on long life water resistant material and shall ship attached to control panel doors.

Unit Casing
Exterior panels shall be zinc coated galvanized steel, phosphatized and painted with a slate gray air-dry finish durable enough to withstand a minimum of 672 hours consecutive salt spray application in accordance with standard ASTM B117. Screws shall be coated with zinc-plus-zinc chromate. Heavy gauge steel hinged access panels with tiebacks to secure door in open position shall provide access to filters and heating sectionsInterior surfaces or exterior casing members will have 1/2"" [12.7 mm] fiberglass insulation. Unit base will be watertight with 14 gauge formed load bearing members, formed recess and curb overhang. Unit lifting lugs will accept chains or cables for rigging. Lifting lugs will also serve as unit tie down points."

Hinged Access Doors
Hinged access doors shall provide easy access to supply fan, filters, exhaust fan, and heating section.These access doors shall feature double wall construction with dual density insulation sandwiched between heavy gauge galvanized steel panels for strength and durability

Scroll Compressors
The Trane Scroll compressor shall be industrial grade, direct drive 3600 RPM maximum speed scroll type. The motor shall be suction gas-cooled hermetic design. Compressor shall have centrifugal oil pump with dirt separator, oil sight glass, and oil charging valve.
Compressor shall also be provided with thermostatic motor winding temperature control to protect against excessive motor temperatures resulting from over-/under-voltage or loss of charge, high and low pressure cutouts, and reset relay.

Condenser Fans and Motors
All condenser fans shall be vertical discharge, direct drive fans, statically balanced, with aluminum blades and zinc plated steel hubs. Condenser fan motors shall be three-phase motors with permanently lubricated ball bearings, built-in current and thermal overload protection and weathertight slingers over motor bearings.

Evaporator Coil
Internally enhanced seamless copper tubing of 1/2 "" [12.7 mm] O.D. shall be mechanically bonded to heavy-duty aluminum fins of configured design. The coils shall be be equipped with thermal expansion valves and factory pressure and leak tested.

Air-Cooled Condenser Coil
Condenser coils shall have all Aluminum Microchannel coils. All coils shall be leak tested at the factory to ensure pressure integrity. The condenser coil is pressure tested to 650 psig. Subcooling circuit(s) shall be provided as standard.

High Efficiency Condenser Coil
Additional rows of coil shall provide increased efficiency compared to standard coils.

High Capacity Evaporator Coil
Additional rows of coil and enhanced evaporator tube surfaces shall provide increased capacity as compared to standard coils.

Gas-fired heating option, 4:1 Modulating Gas Heat
All gas-fired units shall be completely assembled and have a wired gas fired heating system integral within unit. Units shall be cULus approved specifically for outdoor applications downstream from refrigerant cooling coils. All gas piping shall be threaded connection with a pipe cap provided. Gas supply connection shall be provided through the side or bottom of unit. All units shall be fire tested prior to shipment. Heat Exchanger shall be tubular two pass design with stainless steel primary and secondary surfaces made from grades of stainless steel suitable for condensing situations. Free floating design shall eliminate expansion and contraction stresses and noises. Gasketed cleanout plate shall be provided for cleaning of tubes/turbulators. Heat exchanger shall be factory pressure and leak tested. Burner shall be a stainless steel industrial type with an air proving switch to prevent burner operation if the burner is open for maintenance or inspection. Ceramic cone shall be provided to shape the flame to prevent impingement on sides of heat exchanger drum. Burner assembly shall house ignition and monitoring electrode. Combustion Blower shall be centrifugal type fan to provide air required for combustion. Fan motor shall have built-in thermal overload protection. Gas Safety Controls shall include electronic flame safety controls to require proving of combustion air prior to ignition sequence which shall include a 60 second pre-purge cycle. Pilot ignition shall be provided on 1000 MBh heat exchanger units. Continuous electronic flame supervision shall be provided as standard. The heater shall have a turn down ratio of 4 to 1.

Supply Fan (90-130T)
All supply fans shall have two independent fan assemblies with double inlet, air foil fan, motor and fixed pitch sheave drive. All fans shall be statically and dynamically balanced and tested in factory. Supply fans shall be test run in unit as part of unit test. Unit shall reach rated rpm before fan shaft passes through first critical speed. Fan shafts shall be mounted on two grease lubricated ball bearings designed for 200,000 hours average life. Optional extended grease lines shall allow greasing of bearings from unit filter section. Fan motor and fan assembly shall be mounted on common base to allow consistent belt tension with no relative motion between fan and motor shafts. Entire assemblies shall be completely isolated from unit and fan board by two-inch deflection spring isolators. All 60 Hz supply fan motors meet the Energy Independence Security Act of 2007 (EISA)

Variable Air Volume Supply Air Temperature Control
The unit shall be provided with all the necessary controls to operate a variable air volume rooftop from the discharge air temperature, including discharge air microprocessor controller and discharge air sensor. The microprocessor controller shall coordinate the economizer control and the stages of cooling with zone or outdoor air reset capabilities and an adjustable control band to fine-tune the control to specific applications.

Variable Frequency Drive
Unit shall include factory-installed and tested variable frequency drive[s] (VFD) to provide motor speed modulation. The VFD shall receive a 0-10VDC speed signal from the unit controller. The drive will respond to the signal by accelerating or decelerating to maintain the controlling set point (duct static, space pressure, etc). VFD shall also include the following features:

1. Designed, constructed, and tested in accordance with NEMA ICS, NFPA, and IEC standards and housed in a plastic IP20 enclosure.

2. DC link reactors on both the positive and negative rails of the DC bus equal to 3% impedance to minimize power line harmonics.

3. Full rated output current continuously - 110% of rated current for 60 seconds and 160% of rated current for up to 0.5 second while starting.

4. Isolation between the Drive's power circuitry and control circuitry to ensure operator safety and to protect connected electronic control equipment from damage caused by voltage spikes, current surges, and ground loop currents.

5. Audible noise reduction through automatic adjustment of the carrier frequency and frequency avoidance.

6. Rated at 40C with a standard operating range of -10 to 50C (14 to 124F) ambient temperatures and 0 to 95% relative humidity

7. Self-diagnostics and motor protections such as: cULus listed overload, phase loss, and internal thermal overload.

8. Off/Stop and Auto/Start selector switches to start and stop the AC Drive and determine the speed reference.
   a. On units with bypass, an AC Drive/Off/Bypass hand selector switch shall be provided in the unit control box
   b. In DRIVE mode speed reference shall be provided by a 0-10 VDC analog input

9. A keypad interface which shall be programmable by language and feature multiple lines for easy reading.

10. Controlled and/or accessible points such as AC Drive Start/Stop, speed reference, and fault diagnostics.

11. Meter points such as motor power in HP, motor power in kW, motor kW-hr, motor current, motor voltage, hours run, DC link voltage, thermal load on motor,
    Thermal load on AC
    Drive and Heatsink temperature.
12. Troubleshooting features such as:
    a. AC Drive memory storage of the last 10 faults and related operational data

    b. Four simultaneous displays: frequency or speed, run time, output amps and output power

    c. Keypad which shall display: Reference Signal Value, Output Frequency in Hz or percent, Output Amps, Motor HP, Motor kW, kW

13. Coated circuit boards for protection against corrosive environments

14. Field readable BACnet points to allow for communication of stauts, setpoints and diagnostics to the BAS.

Two-inch Spring Isolators
Supply and Exhaust fan (if applicable) assemblies shall be isolated with two-inch nominal deflection to reduce transmission of vibrations

100 Percent Exhaust with Statitrac
Two, double-inlet, forward-curved fans shall be mounted on a common shaft with fixed sheave drive. All fans shall be dynamically balanced and tested in factory before being installed in unit. Exhaust fan shall be test run as part of unit final run test. Unit shall reach rated rpm before fan shaft passes through first critical speed. Fan shaft shall be mounted on two grease lubricated ball bearings designed for 200,000-hour average life. Optional extended grease lines shall be provided to allow greasing of bearings from unit filter section. Fan motor and assembly shall be mounted on common base to allow consistent belt tension with no relative motion between fan and motor shafts. Entire assembly shall be completely isolated from unit and fan board by double deflection, rubber in shear isolators or spring isolation on motor sizes larger than five hp. For both CV and VAV rooftops, the 100 percent modulating exhaust discharge dampers (or VFD) shall be modulated in response to building pressure. A differential pressure control system, (Statitrac), shall use a differential pressure transducer to compare indoor building pressure to outdoor ambient atmospheric pressure. The FC exhaust fan shall be turned on when required to lower building static pressure setpoint. The (Statitrac) control system shall then modulate the discharge dampers (or VFD) to control the building pressure to within the adjustable, specified dead band that shall be adjustable at the Human Interface Panel. All 60 Hz exhaust fan motors meet the Energy Independence Security Act of 2007 (EISA).

0-100 Percent Economizer
Automatically modulating return and outside air dampers assist in the maintaining of the control temperature setpoint to allow "free" cooling. The economizer is equipped with an automatic lockout when the outdoor enthalpy/temperature is not suitable for space temperature control. Minimum position is standard and adjustable with either the Human Interface Control, remote potentiometer, or through the building management system. A spring return actuator insures closure of the outside air dampers during shutdown or power interruption. Mechanical cooling is available to assist the economizing mode. Low leak dampers are standard with a leakage rate of 2.5 percent of nominal airflow of 400 Cfm/ton [189 L/s] per ton at a static pressure of 1" [25.8 mm] w.c.

0-100 percent modulating economizer
Operated through the primary temperature controls to automatically utilize OA for "free" cooling. Automatically modulated return and OA dampers shall maintain proper temperature in the conditioned space. Economizer shall be equipped with an automatic lockout when the outdoor high ambient temperature is too high for proper cooling. Minimum position control shall be standard and adjustable at the Human Interface Panel or with a remote potentiometer or through the building management system. A spring return motor shall ensure closure of OA dampers during unit shutdown or power interruption. Mechanical cooling shall be available to aid the economizer mode at any ambient. Low leak economizer dampers shall be standard with a leakage rate of 2.5 percent of nominal airflow (400 CFM/ton) at 1" wg. static pressure.

Economizer Reference Enthalpy Control
An outdoor enthalpy sensor shall be provided to compare the total heat content of outdoor air to a locally adjustable setpoint. The setpoint shall be programmed at the human interface , or remote human interface, to determine if the outdoor enthalpy condition is suitable for economizer operation.

Ultra-Low Leak Damper
Economizer return and fresh air dampers shall be provided with horizontal airfoil blades and spring-return actuators. The economizer shall have a functional life of 60,000 opening and closing cycles. Dampers shall be AMCA 511 Class 1A certified with a maximum leakage rate of 3 CFM/sqft at 1.0 inWC pressure differential thus exceeding requirements of ASHRAE 90.1-2013, California Title 24-2013, and IECC-2012. Fault Detection and Diagnostic (FDD) control will also be provided with Ultra Low Leak Economizers. FDD control monitors the commanded position of the economizer compared to the feedback position of the damper. If the damper position is outside +/- 10% of the commanded position, a diagnostic is generated.

Ultra-Low Leak motorized exhaust dampers will be provided when the Ultra-Low Leak Economizer is ordered with an exhaust/return option that includes motorized dampers. Ultra Low Leak motorized exhaust dampers will be AMCA 511 Class 1A certified with a maximum leakage rate of 3 CFM/sq-ft at 1.0 inWC pressure differential. This exceeds the most stringent requirements of ASHRAE 90.1 and IECC (4 CFM/sq-ft at 1.0 inWC pressure differential).

High efficiency throwaway, MERV 8
Filters are 2"" [50.8 mm] thick, MERV 8, UL class 2 high efficiency pleated media type. Filters have an average efficiency of 25 to 30 percent, and are rated in excess of 90 percent average synthetic dust weight arrestance, when tested in accordance with ASHRAE 52.76 and 52.1 test methods. Filters mounted in galvanized steel rack.

4" Vertical Filter Rack with Filters
Standard size 4" filters shall be provided in a factory installed filter rack.

Controls
The rooftop unit shall utilize a DDC microprocessor control system which is suitable for CV and VAV applications. The control system shall be factory installed in the main control panel with the necessary internal controls and run tested. Terminal blocks for field power wiring connections shall be standard. Units shall provide a location for a non-fused disconnect switch with an external handle for safety. Unit mounted microprocessor controls shall provide compressor anti-short cycle protection. The unit shall be equipped with a Human Interface Panel with a 16 key keypad, a 2 line by 40 character English display to provide the operator with full adjustment and display of control data function. The unit controls can be used as a stand-alone controller or as part of a building management system.

BACnet Communication Interface Module (BCI)
Shall provide control and monitoring of the rooftop by Tracer SC or a 3rd party building management system utilizing BACnet protocol.

Unit Non-Fused Disconnect
External handle shall enable the operator to disconnect unit power with the control box door closed for safety.

Powered Convenience Outlet
A15A, 115V Ground Fault Interrupter convenience
outlet shall be factory installed. It shall be wired and powered from a factory mounted transformer. Unit-mounted, non-fused disconnect with external handle shall be furnished with factory powered outlet.

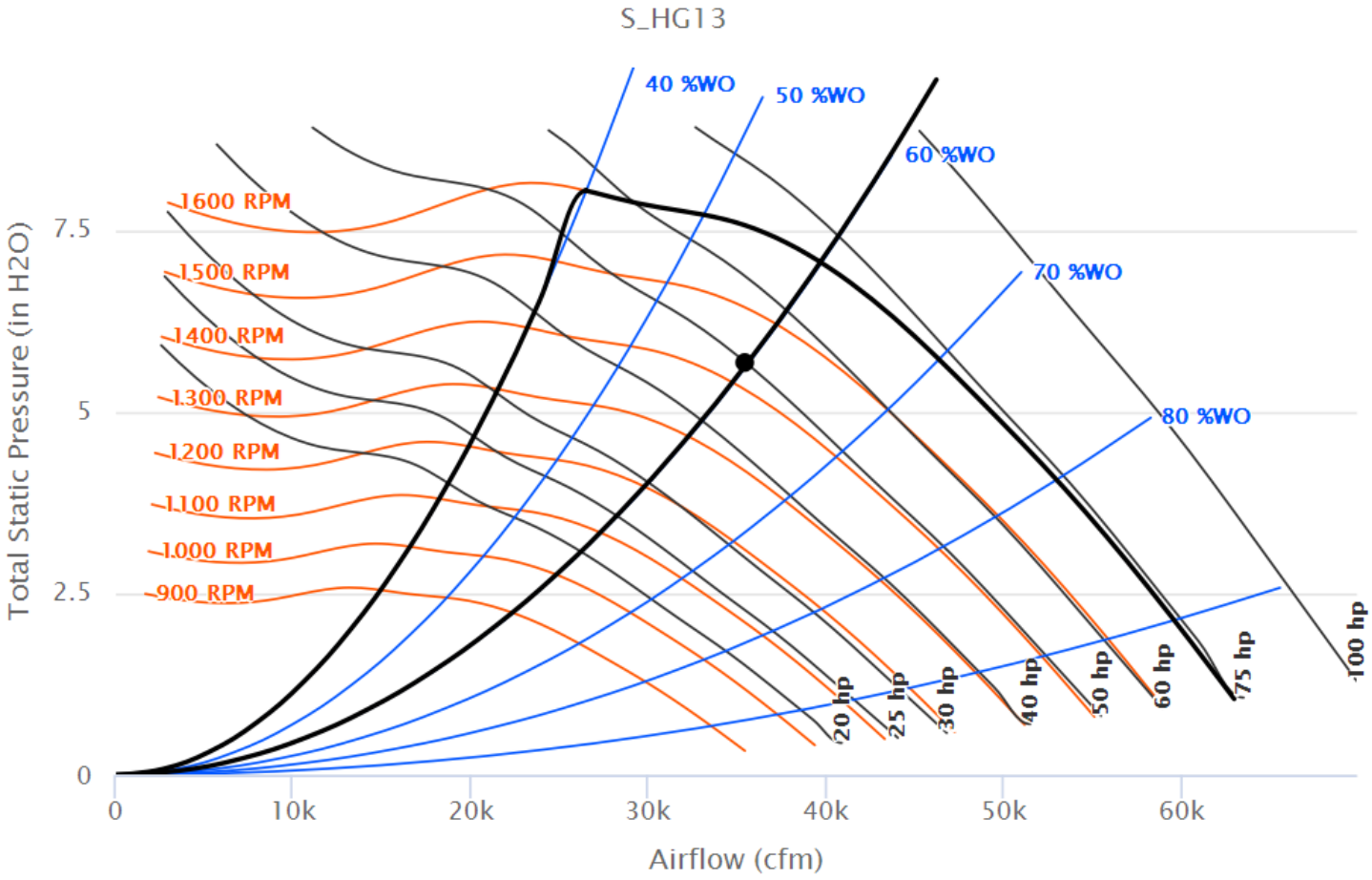
Unit Interrupt Rating (Standard Short Circuit Current Rating-SCCR)
A 5,000 Amp rating shall be applied to the unit enclosure using a non-fused circuit breaker for disconnect switch purposes. Fan motors, compressors, and electric heat circuits shall be provided with protective devices that will provide the unit rated level of fault protection. The unit shall be marked with approved cULus markings and will adhere to cULus regulations.

Temperature Thermistor
Temperature thermistor is used to communicate temperature changes in either the zone, return air, supply air or outside ambient.

Equipment manufactured by Trane that includes required start-up and sold in North America will not be warranted by Trane unless Trane or its authorized independent Trane commercial sales office performs the startup on the equipment.

Fan Details

Unit Size		**Operating Brake Power**	45.65 bhp
Operating Airflow	35,500 cfm	**Altitude**	0.00 ft
Operating Static Pressure	5.668 in H2O	**Design Temp.**	77.00 F
Operating RPM	1,366 rpm		



Unit Overview

Unit Function	Tonnage	EER @ AHRI	IEER @ AHRI	System Power
SF: Natural Gas Heat	90 Ton	10.8 EER	15.1 EER	138.08 kW

Installed Weight	Elevation
	0.00 ft

Unit Features

Capacity/Efficiency Option	High cap evap coil & high eff cond coil
Filter	High-Efficiency Throwaway Filters
Agency Approval	cULus

Unit Electrical

Voltage/Phase/Frequency	Circuit 1			
	MCA	MOP	DSS	RDE
460/60/3	325.45 A	350.00 A	360.00 A	350.00 A

Condenser Fans FLA	14.40 A
Supply Fan FLA	49.00 A
Exhaust Fan FLA	49.00 A
Other FLA	2.00 A

Compressor 1 RLA	37.20 A
Compressor 1 Count	4.00 Each

Condensing Section

Capacity/Efficiency Option	High cap evap coil & high eff cond coil	**Ambient Dry Bulb**	97.00 F
Refrigerant Charge Circuit 1	64.8 lb	**Outdoor Fan Type**	Prop
Refrigerant Charge Circuit 2	64.8 lb	**Outdoor Fan Drive**	Direct

Heating Section

Function	SF: Natural Gas Heat	**Heating EAT**	70.00 F
Heat Capacity	4:1 Mod. Gas Heat	**Heating LAT**	87.85 F
Input Heating Capacity	1000.00 MBh	**Heating Delta T**	17.85 F
Output Heating Capacity	800.00 MBh		
Output Heating Capacity w/ Fan	946.99 MBh		

Cooling Coil (DX) Section

Evaporator Type	Cu-Al
Evaporator Coil Rows	6.00 Each
Evaporator Face Area	59.30 sq ft
Evaporator Face Velocity	696 ft/min

Inputs	
Design Airflow	41300 cfm
Entering Dry Bulb	78.00 F
Entering Wet Bulb	62.00 F
Entering Relative Humidity	40.16 %

Cooling Performance	
Leaving Coil Dry Bulb	53.97 F
Leaving Coil Wet Bulb	52.48 F
Leaving Unit Dry Bulb	57.72 F
Leaving Unit Wet Bulb	54.09 F
Gross Total Capacity	1118.69 MBh
Gross Sensible Capacity	1118.68 MBh
Gross Latent Capacity	0.01 MBh
Net Total Capacity	957.35 MBh
Net Sensible Capacity	957.33 MBh
Net Sensible Heat Ratio (%)	100.00 %

Supply Fan

Supply Fan Type	AF
Supply Fan Count	2
Supply Fan Motor HP	80 Hp (2-40 Hp Motors)
Supply Motor Count	2.00 Each
Supply Fan Motor Drive	1600 rpm
System Control	VAV (DTC) SF & EF/RF VFD w/ Bypass
Isolator Option	Spring isolators

Performance	
Design Airflow	41300 cfm
Supply Duct Static Pressure	2.500 in H2O
Component Static Pressure	2.751 in H2O
Return Duct Static Pressure	1.000 in H2O
Total Static Pressure	6.251 in H2O
Total Supply BHP	57.71 bhp
Operating Speed (RPM)	1469 rpm
Supply Fan Motor Heat	161.34 MBh

Outside Air & Relief Sections

Outside Air Section	
Outside Air Option	0-100% Economizer
Outside Air Control	Econ control w/reference enthalpy
Damper Option	Ultra low leak damper w/ FDD

Relief Section	
Airflow	40000 cfm
Return Duct Static Pressure	1.000 in H2O
Fan Option	100% - 40 Hp w/Statitrac
Actual BHP	35.45 bhp
Operating Speed (RPM)	787 rpm
Motor Drive	800 rpm
Isolator Option	Spring isolators

Acoustics

	63	125	250	500	1K	2K	4K	8K
Discharge Duct	94 dB	90 dB	98 dB	93 dB	89 dB	80 dB	77 dB	71 dB
Return Duct	84 dB	85 dB	90 dB	80 dB	74 dB	71 dB	67 dB	60 dB
Exhaust Fan	92 dB	89 dB	86 dB	86 dB	85 dB	81 dB	77 dB	69 dB

Controls & Service Options

Controls	
Communication Protocol	BACnet communication interface module

Service	
Cabinet Options	Access doors

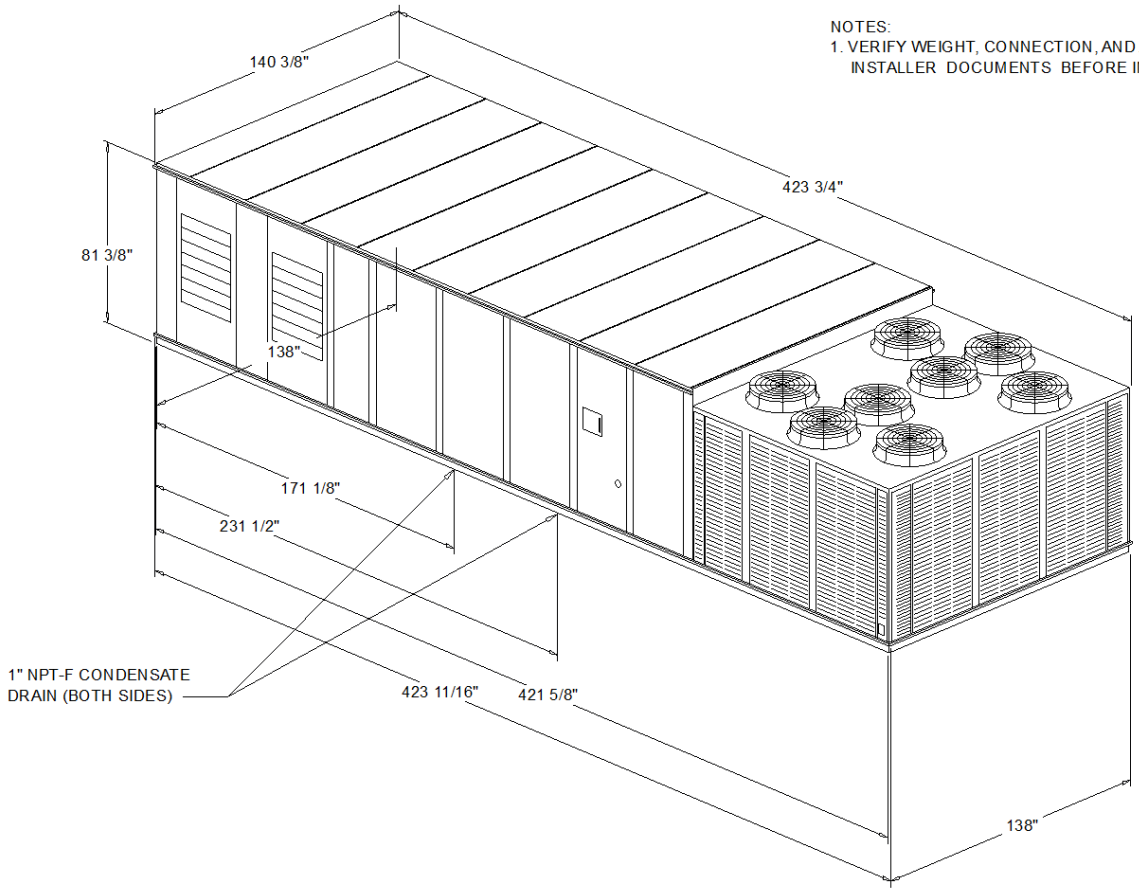
Accessories/Misc.

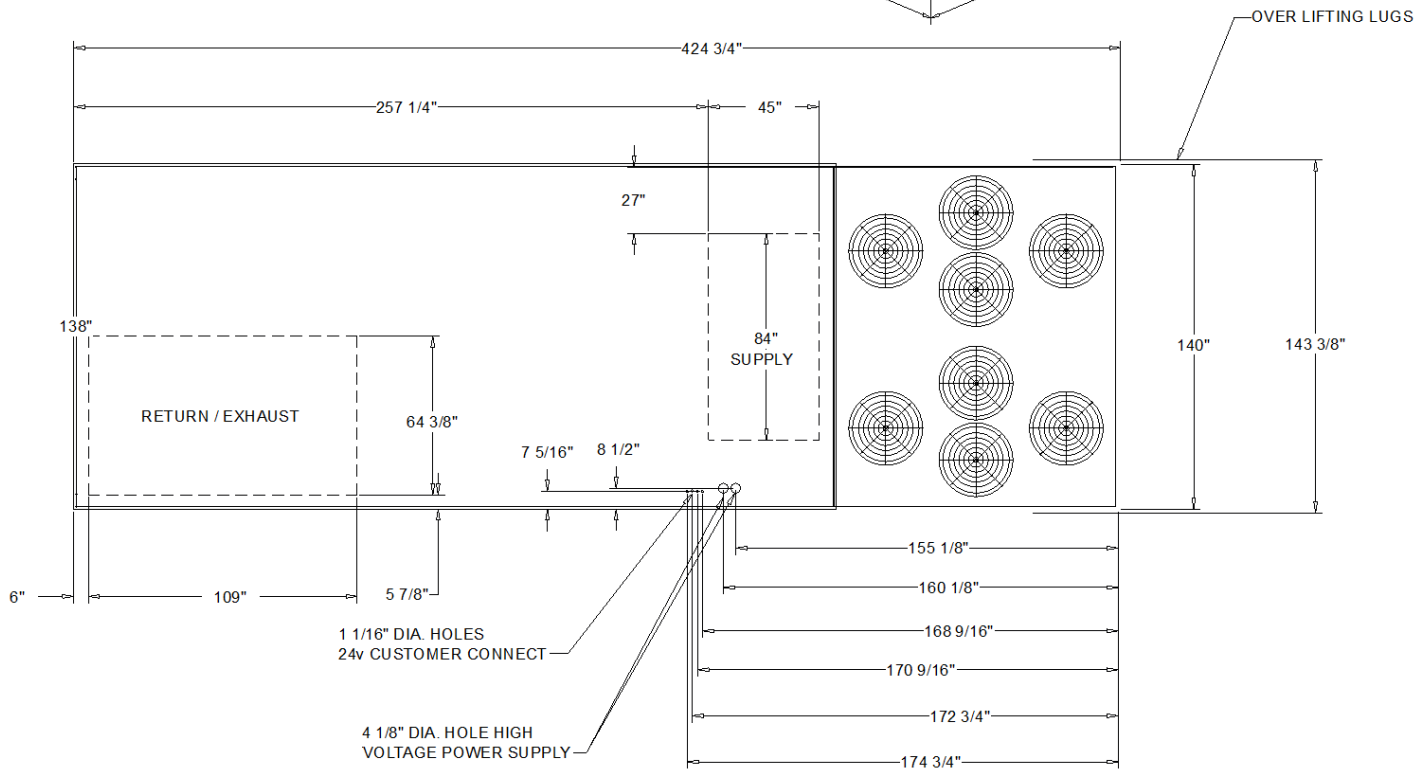
Start Up	Startup

Warranty

Labor Warranty (First Year)	Year 1 Labor Warranty
Refrigerant Warranty (First Year)	1st Year Refrigerant Warranty

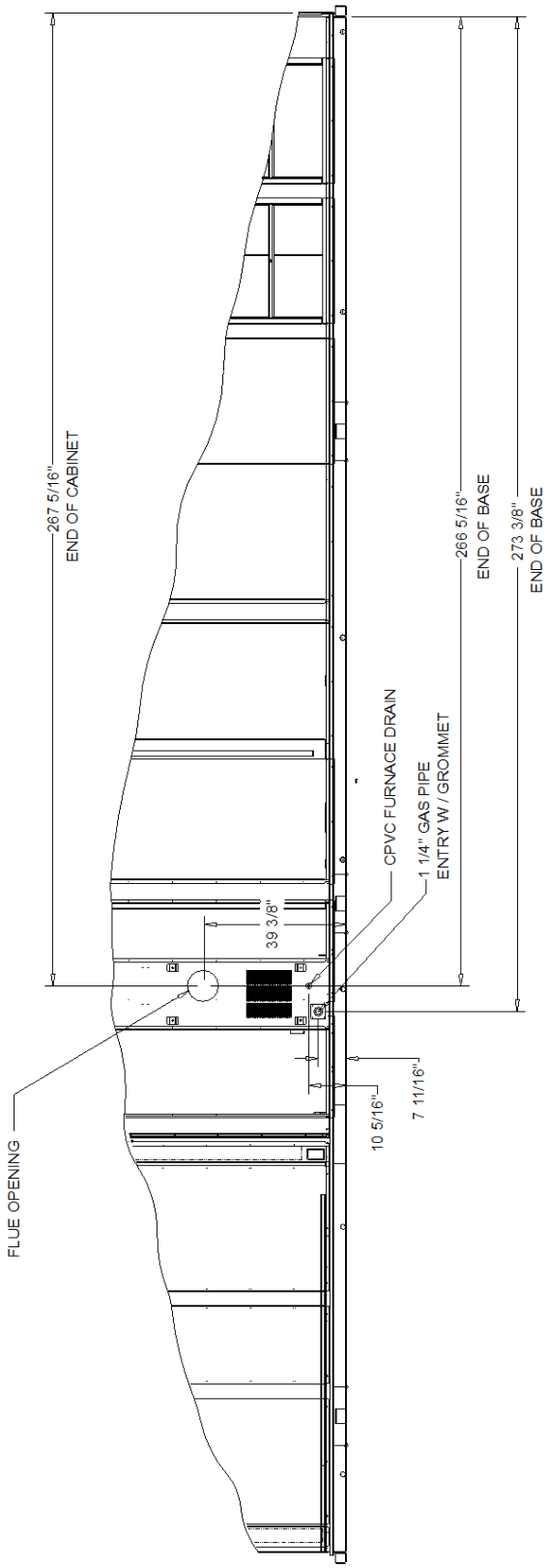
NOTES:
1. VERIFY WEIGHT, CONNECTION, AND ALL DIMENSION WITH INSTALLER DOCUMENTS BEFORE INSTALLATION





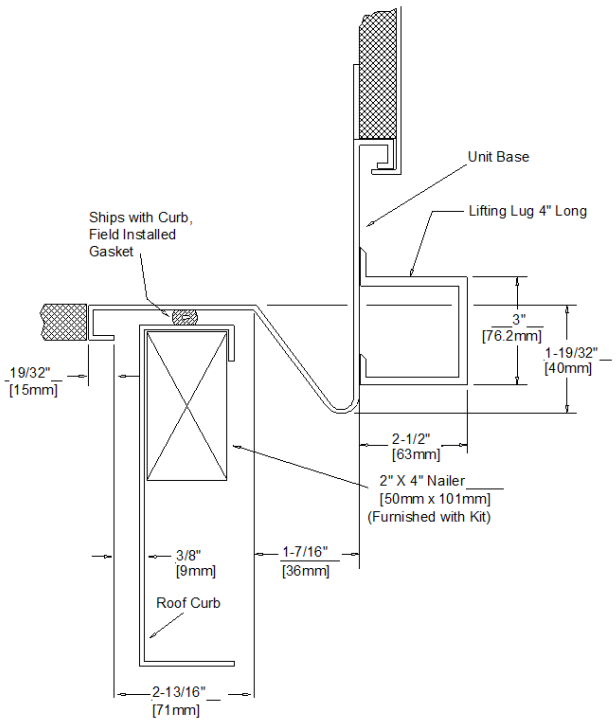
90 - 130 TON SELF- CONTAINED

PLAN VIEW DRAWING

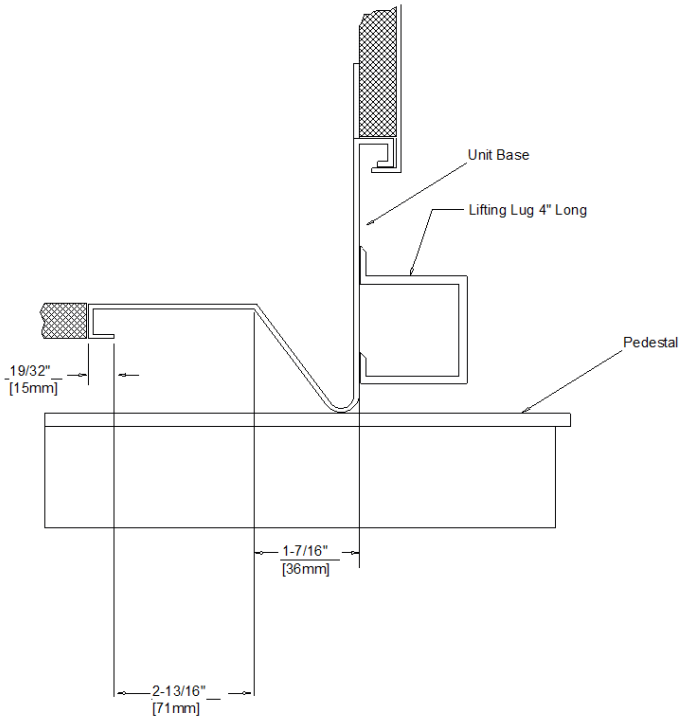


90 - 130 TON GAS HEAT
RIGHT SIDE OF UNIT

TYPICAL ROOF CURB AND BASE PAN DETAIL



TYPICAL PEDESTAL AND BASE PAN DETAIL



ELECTRICAL / GENERAL DATA

GENERAL DATA	
Tonnage:	90
Unit Operating Voltage Range:	414 -506
Unit Primary Voltage:	460
Unit Hertz:	60
Unit Phase:	3
EER	10.8 EER

ELECTRIC HEATER	
Electric Heater kw	
Electric Heater Full Load Amps	

HEATING - PERFORMANCE	
Heat Input:	250-1000
Heat Output:	200-800
Capacity Steps:	4:1

HEATING - GENERAL DATA	
Gas Inlet Pressure (in w.c.):	14.0 w.c. / 7.0 w.c.
Gas Pipe Connection Size:	1 1/4"

COMPRESSOR	Circuit #1	Circuit #2
Number:	2	2
Tons (Each) (5):	20/20	20/20
Compressor Rated Load Amps (Each):	37.20 A	0.00 A
Locked Rotor Amps (Each):	215.0 / 215.0	215.0 / 215.0

SUPPLY FAN MOTOR	
Number:	2
Horsepower (Each):	40.0
Supply Fan Motor Full Load Amps (Each):	49.00 A

EXHAUST FAN MOTOR	
Number:	1
Horsepower (Each):	40.0
Exhaust Fan Motor Full Load Amps (Each):	49.00 A

CONDENSOR FAN MOTOR	
Number:	8
Horsepower (Each):	1.0
Condensor Fan Motor Full Load Amps (Each):	14.40 A

REFRIGERANT	
Refrigeran Type:	R-410A
Factory Charge (Circuit #1) (6):	64.8 lb
Factory Charge (Circuit #2) (6):	64.8 lb

FILTERS - TYPE	
Type:	High Efficiency Rack-less Filter Yes
Furnished:	No
Number:	25
Recommended Size:	24" x 24" x 2"

FINAL FILTERS - TYPE	
Type:	
Furnished:	
Number:	
Recommended Size:	

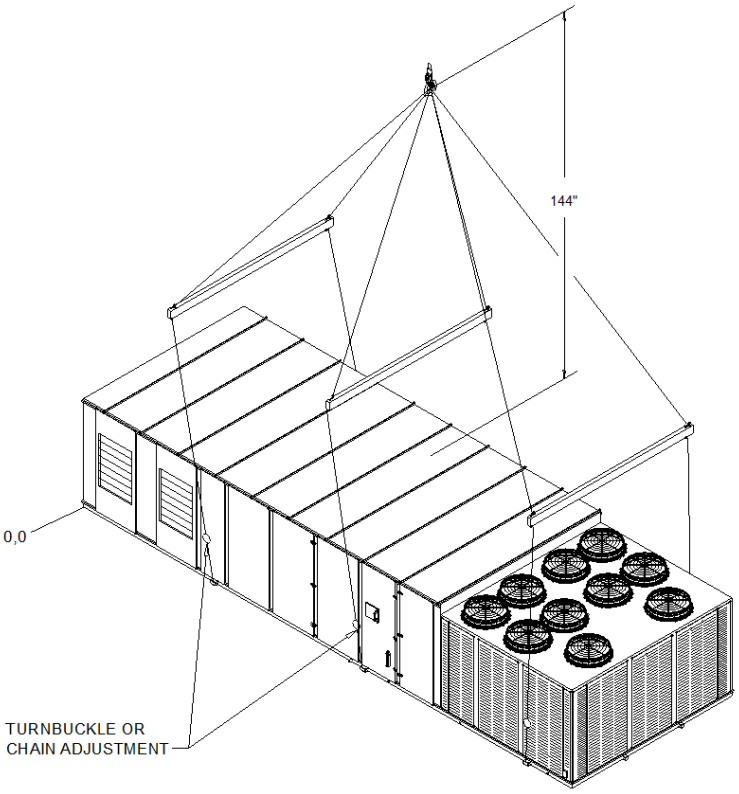
Cooling MCA = (1.25 x LOAD 1) + LOAD 2 + LOAD 4

Cooling MOP= (2.25 x LOAD 1) + LOAD 2 + LOAD 4

Cooling RDE= (1.5 x LOAD 1) + LOAD 2 + LOAD 4

Notes:

1. LOAD 1= Current of the largest motor (Compressor or Fan Motor); LOAD 2=Sum of the currents of all remaining motors
LOAD 3= FLA(Full Load Amps) of the electric heater; LOAD 4= Any other load rated at 1 amp or more.
2. For Electric Heat MCA, MOP, RDE values, calculate for both cooling and heating modes.
3. If selected Max Over Cur is less than the Min Cir Amp, then select the lowest maximum fuse size which is equal to or larger than the Min Cir Amp, provided the selected fuse size does not exceed 800 amps.
4. If the selected Recommended Dual Element fuse size is greater than the selected Max Over Cur Protection value, then select the Recommended Dual Element fuse size value to equal the Max Over Protection value.
5.. Compressor KW at AHRI rating conditions of 80/67 -95
6. Refrigerant charge is an approx. value. For a more precise value, see unit nameplate and service instructions.



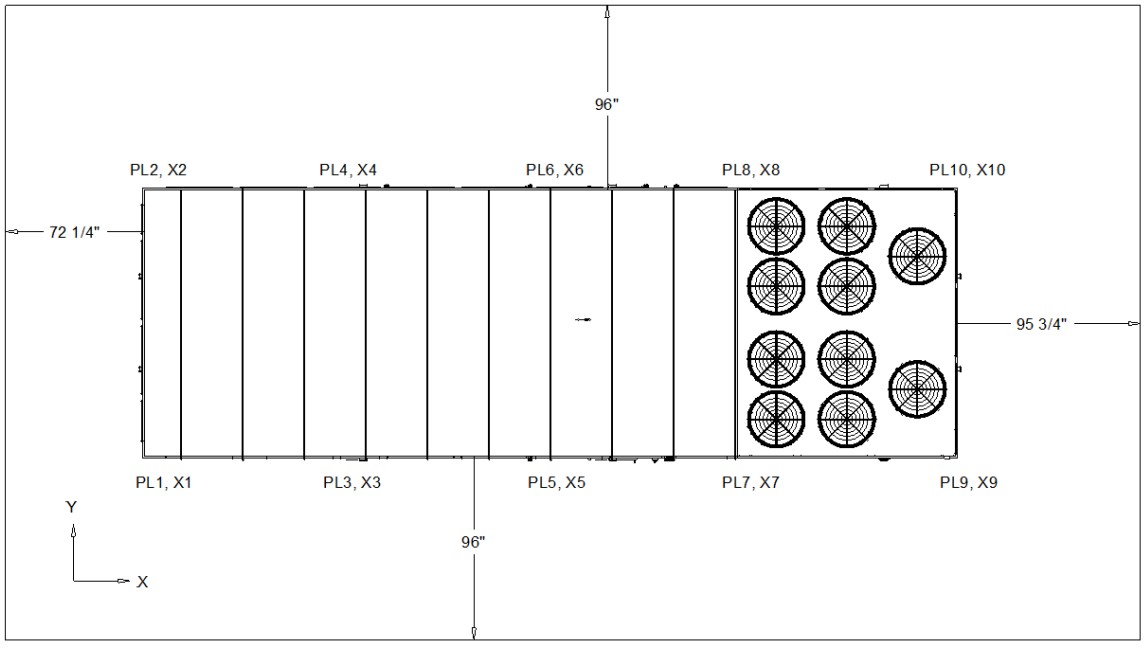
		Point Load Location
Calculated weight:	N/A	
Point Load 1:	N/A	N/A: N/A
Point Load 2:	N/A	N/A: N/A
Point Load 3:	N/A	N/A: N/A
Point Load 4:	N/A	N/A: N/A
Point Load 5:	N/A	N/A: N/A
Point Load 6:	N/A	N/A: N/A
Point Load 7:	N/A	N/A: N/A
Point Load 8:	N/A	
Point Load 9:	N/A	
Point Load 10:	N/A	
Total Weight:	N/A	
Center f Gravity x:	N/A	
Center of Gravity y:	N/A	

Notes:
1.The actual weight is stamped on the unit nameplate.
2. The weight shown represents the typical unit operating weight for the configuration selected. Estimated at +/- 10% of the nameplate weight.
3. Design special weights are not displayed. Any weight added through COD (Custom Order Design) will not be accounted in the +/- 10% estimate
4. When 2 or more units are to be placed side by side, the distance between the units should be increased to 150% of the recommended single unit clearance. The units should also be staggered to reduce span deflection & assure proper diffusion of exhaust air.

RIGGING

ISOMETRIC VIEW OF UNIT

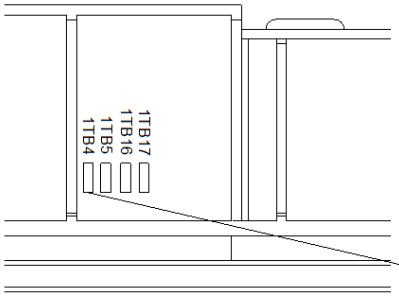
SERVICE CLEARANCE



SERVICE CLEARANCE

CENTER OF GRAVITY AND CLEARANCES

PLAN VIEW OF UNIT



⚠ WARNING

HAZARDOUS VOLTAGE!

DISCONNECT ALL ELECTRIC POWER INCLUDING REMOTE DISCONNECTS BEFORE SERVICING.

FAILURE TO DISCONNECT POWER BEFORE SERVICING CAN CAUSE SEVERE PERSONAL INJURY OR DEATH.

⚠ AVERTISSEMENT

VOLTAGE HASARDEUX!

DECONNECTEZ TOUTES LES SOURCES ELECTRIQUES INCLUANT LES DISJONCTEURS SITUES A DISTANCE AVANT D'EFFECTUER L'ENTRETIEN.

FAUTE DE DECONNECTER LA SOURCE ELECTRIQUE AVANT D'EFFECTUER L'ENTRETIEN PEUT ENTRAINER DES BLESSURES CORPORELLES SEVERES OU LA MORT.

⚠ CAUTION

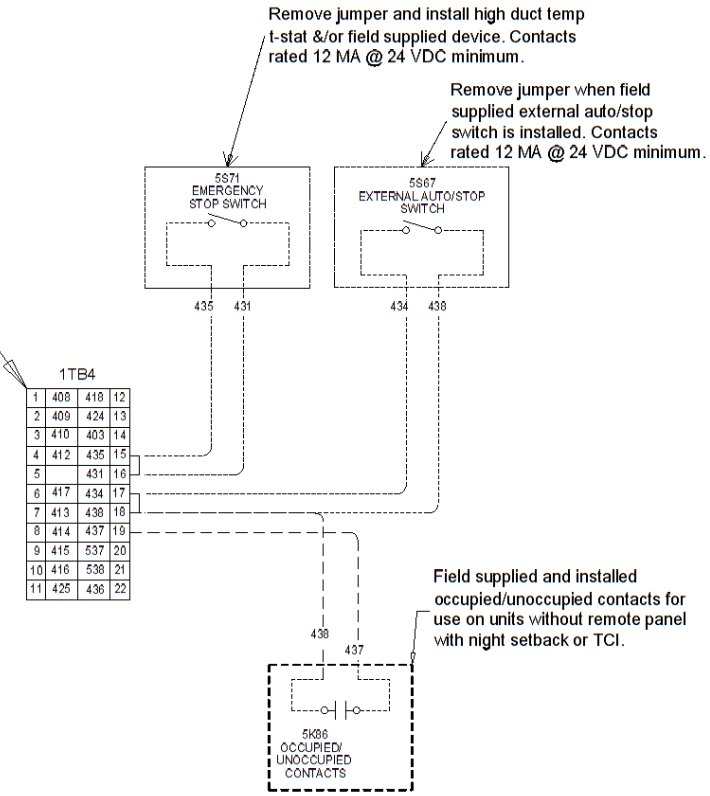
USE COPPER CONDUCTORS ONLY!

UNIT TERMINALS ARE NOT DESIGNED TO ACCEPT OTHER TYPES OF CONDUCTORS.

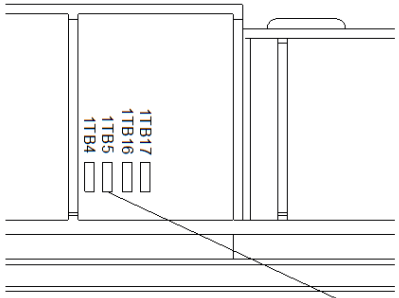
FAILURE TO DO SO MAY CAUSE DAMAGE TO THE EQUIPMENT.

IMPORTANT!
DO NOT ENERGIZE
UNIT UNTIL CHECK-OUT
AND START-UP PROCEDURE
HAS BEEN COMPLETED

DEVICE PREFIX LOCATION CODE	
AREA	LOCATION
1	INSIDE UNIT CONTROL BOX
2	CONDENSER SECTION
3	AIR HANDLER SECTION
4	HEATING SECTION
5	EXTERNAL FIELD MOUNTED DEVICE



Note: All wiring and components shown dashed to be supplied and installed by the customer in accordance with local electrical codes.



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DEVICE PREFIX LOCATION CODE	
AREA	LOCATION
1	INSIDE UNIT CONTROL BOX
2	CONDENSER SECTION
3	AIR HANDLER SECTION
4	HEATING SECTION
5	EXTERNAL FIELD MOUNTED DEVICE

1TB5

1	489	475	12
2	490	476	13
3	523	528	14
4	524	529	15
5	525	530	16
6	526	531	17
7	527	532	18
8	549	533	19
9	550	534	20
10	427	443	21
11	426	444	22

534 533
TRACER COMMUNICATIONS

Required with TCI Module option.
Use shielded twisted pair wire.

Note: All wiring and components shown dashed to be supplied and installed by the customer in accordance with local electrical codes.

TRANE

Job Name: Marion County Courthouse - SN C99J189966M
Prepared By:
Unit Tag: AC-2
Quantity: 1

General
Units shall be specifically designed for outdoor rooftop installation on a roof curb and be completely factory assembled and tested, piped, internally wired, fully charged with R-410A compressor oil and shipped in one piece. Units shall be available for direct expansion cooling only, or direct expansion cooling with natural gas, electric, hot water or steam heating. Filters, outside air system, exhaust air system, optional non-fused disconnect switches and all operating and safety controls shall be furnished factory installed. All units shall be cULus approved and factory run tested. Cooling capacity shall be rated in accordance with AHRI Standard 360. All units shall have decals and tags to aid in service and indicate caution areas. Electrical diagrams shall be printed on long life water resistant material and shall ship attached to control panel doors.

Unit Casing
Exterior panels shall be zinc coated galvanized steel, phosphatized and painted with a slate gray air-dry finish durable enough to withstand a minimum of 672 hours consecutive salt spray application in accordance with standard ASTM B117. Screws shall be coated with zinc-plus-zinc chromate. Heavy gauge steel hinged access panels with tiebacks to secure door in open position shall provide access to filters and heating sectionsInterior surfaces or exterior casing members will have 1/2"" [12.7 mm] fiberglass insulation. Unit base will be watertight with 14 gauge formed load bearing members, formed recess and curb overhang. Unit lifting lugs will accept chains or cables for rigging. Lifting lugs will also serve as unit tie down points."

Hinged Access Doors
Hinged access doors shall provide easy access to supply fan, filters, exhaust fan, and heating section.These access doors shall feature double wall construction with dual density insulation sandwiched between heavy gauge galvanized steel panels for strength and durability

Scroll Compressors
The Trane Scroll compressor shall be industrial grade, direct drive 3600 RPM maximum speed scroll type. The motor shall be suction gas-cooled hermetic design. Compressor shall have centrifugal oil pump with dirt separator, oil sight glass, and oil charging valve.
Compressor shall also be provided with thermostatic motor winding temperature control to protect against excessive motor temperatures resulting from over-/under-voltage or loss of charge, high and low pressure cutouts, and reset relay.

Condenser Fans and Motors
All condenser fans shall be vertical discharge, direct drive fans, statically balanced, with aluminum blades and zinc plated steel hubs. Condenser fan motors shall be three-phase motors with permanently lubricated ball bearings, built-in current and thermal overload protection and weathertight slingers over motor bearings.

Evaporator Coil
Internally enhanced seamless copper tubing of 1/2 "" [12.7 mm] O.D. shall be mechanically bonded to heavy-duty aluminum fins of configured design. The coils shall be be equipped with thermal expansion valves and factory pressure and leak tested.

Air-Cooled Condenser Coil
Condenser coils shall have all Aluminum Microchannel coils. All coils shall be leak tested at the factory to ensure pressure integrity. The condenser coil is pressure tested to 650 psig. Subcooling circuit(s) shall be provided as standard.

High Efficiency Condenser Coil
Additional rows of coil shall provide increased efficiency compared to standard coils.

High Capacity Evaporator Coil
Additional rows of coil and enhanced evaporator tube surfaces shall provide increased capacity as compared to standard coils.

Gas-fired heating option, 4:1 Modulating Gas Heat
All gas-fired units shall be completely assembled and have a wired gas fired heating system integral within unit. Units shall be cULus approved specifically for outdoor applications downstream from refrigerant cooling coils. All gas piping shall be threaded connection with a pipe cap provided. Gas supply connection shall be provided through the side or bottom of unit. All units shall be fire tested prior to shipment. Heat Exchanger shall be tubular two pass design with stainless steel primary and secondary surfaces made from grades of stainless steel suitable for condensing situations. Free floating design shall eliminate expansion and contraction stresses and noises. Gasketed cleanout plate shall be provided for cleaning of tubes/turbulators. Heat exchanger shall be factory pressure and leak tested. Burner shall be a stainless steel industrial type with an air proving switch to prevent burner operation if the burner is open for maintenance or inspection. Ceramic cone shall be provided to shape the flame to prevent impingement on sides of heat exchanger drum. Burner assembly shall house ignition and monitoring electrode. Combustion Blower shall be centrifugal type fan to provide air required for combustion. Fan motor shall have built-in thermal overload protection. Gas Safety Controls shall include electronic flame safety controls to require proving of combustion air prior to ignition sequence which shall include a 60 second pre-purge cycle. Pilot ignition shall be provided on 1000 MBh heat exchanger units. Continuous electronic flame supervision shall be provided as standard. The heater shall have a turn down ratio of 4 to 1.

Supply Fan (90-130T)
All supply fans shall have two independent fan assemblies with double inlet, air foil fan, motor and fixed pitch sheave drive. All fans shall be statically and dynamically balanced and tested in factory. Supply fans shall be test run in unit as part of unit test. Unit shall reach rated rpm before fan shaft passes through first critical speed. Fan shafts shall be mounted on two grease lubricated ball bearings designed for 200,000 hours average life. Optional extended grease lines shall allow greasing of bearings from unit filter section. Fan motor and fan assembly shall be mounted on common base to allow consistent belt tension with no relative motion between fan and motor shafts. Entire assemblies shall be completely isolated from unit and fan board by two-inch deflection spring isolators. All 60 Hz supply fan motors meet the Energy Independence Security Act of 2007 (EISA)

Variable Air Volume Supply Air Temperature Control
The unit shall be provided with all the necessary controls to operate a variable air volume rooftop from the discharge air temperature, including discharge air microprocessor controller and discharge air sensor. The microprocessor controller shall coordinate the economizer control and the stages of cooling with zone or outdoor air reset capabilities and an adjustable control band to fine-tune the control to specific applications.

Variable Frequency Drive
Unit shall include factory-installed and tested variable frequency drive[s] (VFD) to provide motor speed modulation. The VFD shall receive a 0-10VDC speed signal from the unit controller. The drive will respond to the signal by accelerating or decelerating to maintain the controlling set point (duct static, space pressure, etc). VFD shall also include the following features:

1. Designed, constructed, and tested in accordance with NEMA ICS, NFPA, and IEC standards and housed in a plastic IP20 enclosure.

2. DC link reactors on both the positive and negative rails of the DC bus equal to 3% impedance to minimize power line harmonics.

3. Full rated output current continuously - 110% of rated current for 60 seconds and 160% of rated current for up to 0.5 second while starting.

4. Isolation between the Drive's power circuitry and control circuitry to ensure operator safety and to protect connected electronic control equipment from damage caused by voltage spikes, current surges, and ground loop currents.

5. Audible noise reduction through automatic adjustment of the carrier frequency and frequency avoidance.

6. Rated at 40C with a standard operating range of -10 to 50C (14 to 124F) ambient temperatures and 0 to 95% relative humidity

7. Self-diagnostics and motor protections such as: cULus listed overload, phase loss, and internal thermal overload.

8. Off/Stop and Auto/Start selector switches to start and stop the AC Drive and determine the speed reference.
   a. On units with bypass, an AC Drive/Off/Bypass hand selector switch shall be provided in the unit control box
   b. In DRIVE mode speed reference shall be provided by a 0-10 VDC analog input

9. A keypad interface which shall be programmable by language and feature multiple lines for easy reading.

10. Controlled and/or accessible points such as AC Drive Start/Stop, speed reference, and fault diagnostics.

11. Meter points such as motor power in HP, motor power in kW, motor kW-hr, motor current, motor voltage, hours run, DC link voltage, thermal load on motor,
    Thermal load on AC
    Drive and Heatsink temperature.
12. Troubleshooting features such as:
    a. AC Drive memory storage of the last 10 faults and related operational data

    b. Four simultaneous displays: frequency or speed, run time, output amps and output power

    c. Keypad which shall display: Reference Signal Value, Output Frequency in Hz or percent, Output Amps, Motor HP, Motor kW, kW

13. Coated circuit boards for protection against corrosive environments

14. Field readable BACnet points to allow for communication of stauts, setpoints and diagnostics to the BAS.

Two-inch Spring Isolators
Supply and Exhaust fan (if applicable) assemblies shall be isolated with two-inch nominal deflection to reduce transmission of vibrations

100 Percent Exhaust with Statitrac
Two, double-inlet, forward-curved fans shall be mounted on a common shaft with fixed sheave drive. All fans shall be dynamically balanced and tested in factory before being installed in unit. Exhaust fan shall be test run as part of unit final run test. Unit shall reach rated rpm before fan shaft passes through first critical speed. Fan shaft shall be mounted on two grease lubricated ball bearings designed for 200,000-hour average life. Optional extended grease lines shall be provided to allow greasing of bearings from unit filter section. Fan motor and assembly shall be mounted on common base to allow consistent belt tension with no relative motion between fan and motor shafts. Entire assembly shall be completely isolated from unit and fan board by double deflection, rubber in shear isolators or spring isolation on motor sizes larger than five hp. For both CV and VAV rooftops, the 100 percent modulating exhaust discharge dampers (or VFD) shall be modulated in response to building pressure. A differential pressure control system, (Statitrac), shall use a differential pressure transducer to compare indoor building pressure to outdoor ambient atmospheric pressure. The FC exhaust fan shall be turned on when required to lower building static pressure setpoint. The (Statitrac) control system shall then modulate the discharge dampers (or VFD) to control the building pressure to within the adjustable, specified dead band that shall be adjustable at the Human Interface Panel. All 60 Hz exhaust fan motors meet the Energy Independence Security Act of 2007 (EISA).

0-100 Percent Economizer
Automatically modulating return and outside air dampers assist in the maintaining of the control temperature setpoint to allow "free" cooling. The economizer is equipped with an automatic lockout when the outdoor enthalpy/temperature is not suitable for space temperature control. Minimum position is standard and adjustable with either the Human Interface Control, remote potentiometer, or through the building management system. A spring return actuator insures closure of the outside air dampers during shutdown or power interruption. Mechanical cooling is available to assist the economizing mode. Low leak dampers are standard with a leakage rate of 2.5 percent of nominal airflow of 400 Cfm/ton [189 L/s] per ton at a static pressure of 1" [25.8 mm] w.c.

0-100 percent modulating economizer
Operated through the primary temperature controls to automatically utilize OA for "free" cooling. Automatically modulated return and OA dampers shall maintain proper temperature in the conditioned space. Economizer shall be equipped with an automatic lockout when the outdoor high ambient temperature is too high for proper cooling. Minimum position control shall be standard and adjustable at the Human Interface Panel or with a remote potentiometer or through the building management system. A spring return motor shall ensure closure of OA dampers during unit shutdown or power interruption. Mechanical cooling shall be available to aid the economizer mode at any ambient. Low leak economizer dampers shall be standard with a leakage rate of 2.5 percent of nominal airflow (400 CFM/ton) at 1" wg. static pressure.

Economizer Reference Enthalpy Control
An outdoor enthalpy sensor shall be provided to compare the total heat content of outdoor air to a locally adjustable setpoint. The setpoint shall be programmed at the human interface , or remote human interface, to determine if the outdoor enthalpy condition is suitable for economizer operation.

Ultra-Low Leak Damper
Economizer return and fresh air dampers shall be provided with horizontal airfoil blades and spring-return actuators. The economizer shall have a functional life of 60,000 opening and closing cycles. Dampers shall be AMCA 511 Class 1A certified with a maximum leakage rate of 3 CFM/sqft at 1.0 inWC pressure differential thus exceeding requirements of ASHRAE 90.1-2013, California Title 24-2013, and IECC-2012. Fault Detection and Diagnostic (FDD) control will also be provided with Ultra Low Leak Economizers. FDD control monitors the commanded position of the economizer compared to the feedback position of the damper. If the damper position is outside +/- 10% of the commanded position, a diagnostic is generated.

Ultra-Low Leak motorized exhaust dampers will be provided when the Ultra-Low Leak Economizer is ordered with an exhaust/return option that includes motorized dampers. Ultra Low Leak motorized exhaust dampers will be AMCA 511 Class 1A certified with a maximum leakage rate of 3 CFM/sq-ft at 1.0 inWC pressure differential. This exceeds the most stringent requirements of ASHRAE 90.1 and IECC (4 CFM/sq-ft at 1.0 inWC pressure differential).

High efficiency throwaway, MERV 8
Filters are 2"" [50.8 mm] thick, MERV 8, UL class 2 high efficiency pleated media type. Filters have an average efficiency of 25 to 30 percent, and are rated in excess of 90 percent average synthetic dust weight arrestance, when tested in accordance with ASHRAE 52.76 and 52.1 test methods. Filters mounted in galvanized steel rack.

4" Vertical Filter Rack with Filters
Standard size 4" filters shall be provided in a factory installed filter rack.

Controls
The rooftop unit shall utilize a DDC microprocessor control system which is suitable for CV and VAV applications. The control system shall be factory installed in the main control panel with the necessary internal controls and run tested. Terminal blocks for field power wiring connections shall be standard. Units shall provide a location for a non-fused disconnect switch with an external handle for safety. Unit mounted microprocessor controls shall provide compressor anti-short cycle protection. The unit shall be equipped with a Human Interface Panel with a 16 key keypad, a 2 line by 40 character English display to provide the operator with full adjustment and display of control data function. The unit controls can be used as a stand-alone controller or as part of a building management system.

BACnet Communication Interface Module (BCI)
Shall provide control and monitoring of the rooftop by Tracer SC or a 3rd party building management system utilizing BACnet protocol.

Unit Non-Fused Disconnect
External handle shall enable the operator to disconnect unit power with the control box door closed for safety.

Powered Convenience Outlet
A15A, 115V Ground Fault Interrupter convenience
outlet shall be factory installed. It shall be wired and powered from a factory mounted transformer. Unit-mounted, non-fused disconnect with external handle shall be furnished with factory powered outlet.

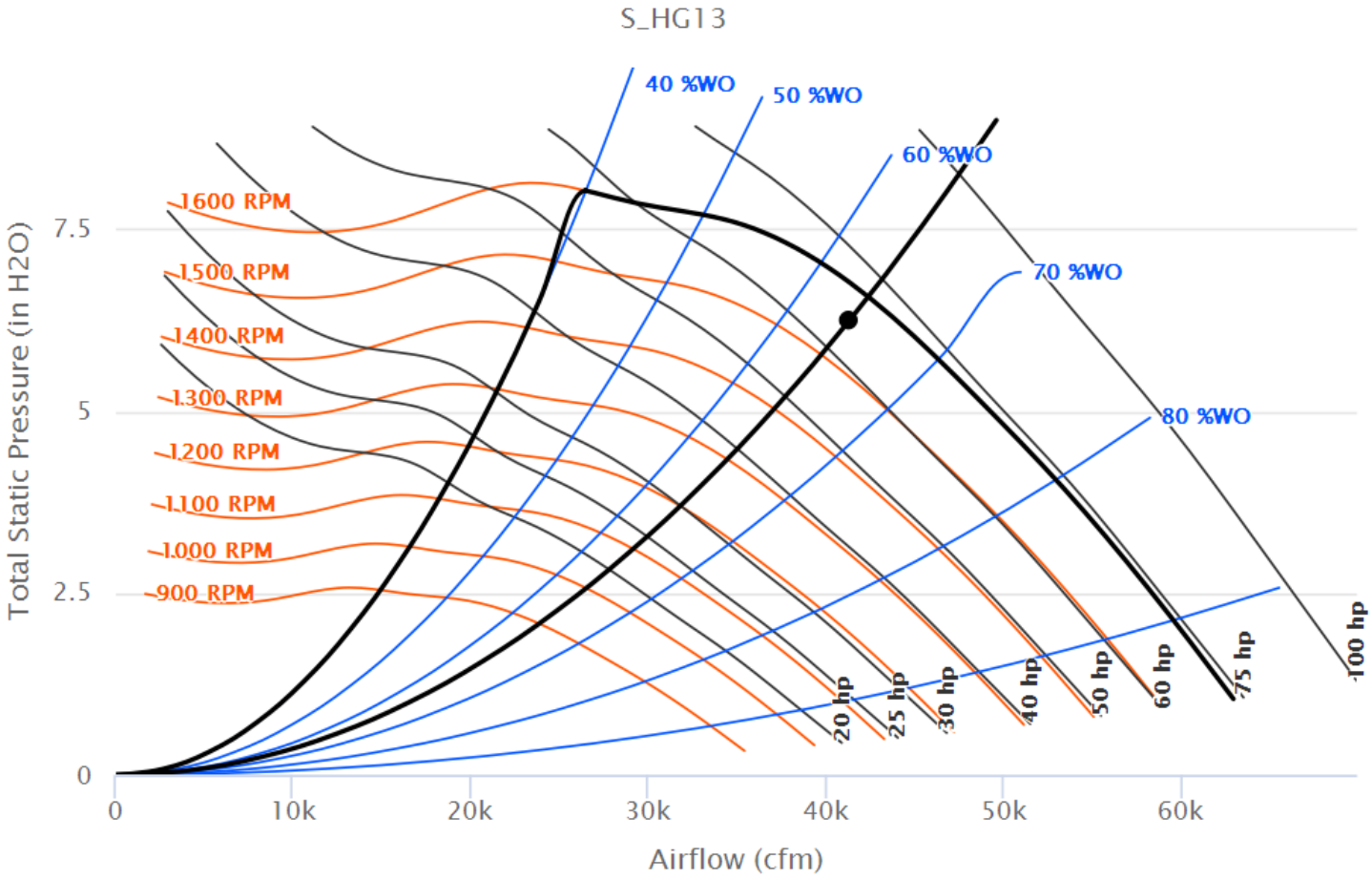
Unit Interrupt Rating (Standard Short Circuit Current Rating-SCCR)
A 5,000 Amp rating shall be applied to the unit enclosure using a non-fused circuit breaker for disconnect switch purposes. Fan motors, compressors, and electric heat circuits shall be provided with protective devices that will provide the unit rated level of fault protection. The unit shall be marked with approved cULus markings and will adhere to cULus regulations.

Temperature Thermistor
Temperature thermistor is used to communicate temperature changes in either the zone, return air, supply air or outside ambient.

Equipment manufactured by Trane that includes required start-up and sold in North America will not be warranted by Trane unless Trane or its authorized independent Trane commercial sales office performs the startup on the equipment.

Fan Details

Unit Size		**Operating Brake Power**	57.71 bhp
Operating Airflow	41,300 cfm	**Altitude**	0.00 ft
Operating Static Pressure	6.251 in H2O	**Design Temp.**	78.00 F
Operating RPM	1,469 rpm		



Unit Overview

Unit Function	Tonnage	EER @ AHRI	IEER @ AHRI	System Power
SF: Natural Gas Heat	115 Ton	10.3 EER	14.4 EER	160.41 kW

Installed Weight	Elevation
	0.00 ft

Unit Features

Filter	High-Efficiency Throwaway Filters
Agency Approval	cULus

Unit Electrical

Voltage/Phase/Frequency	Circuit 1			
	MCA	MOP	DSS	RDE
460/60/3	344.65 A	350.00 A	382.00 A	350.00 A

Condenser Fans FLA	18.00 A	**Compressor 1 RLA**	37.20 A
Supply Fan FLA	49.00 A	**Compressor 1 Count**	2.00 Each
Exhaust Fan FLA	49.00 A	**Compressor 2 RLA**	45.00 A
Other FLA	2.00 A	**Compressor 2 Count**	2.00 Each

Condensing Section

Refrigerant Charge Circuit 1	76.8 lb	**Ambient Dry Bulb**	97.00 F
Refrigerant Charge Circuit 2	76.8 lb	**Outdoor Fan Type**	Prop
		Outdoor Fan Drive	Direct

Heating Section

Function	SF: Natural Gas Heat	**Heating EAT**	70.00 F
Heat Capacity	4:1 Mod. Gas Heat	**Heating LAT**	86.20 F
Input Heating Capacity	1000.00 MBh	**Heating Delta T**	16.20 F
Output Heating Capacity	800.00 MBh		
Output Heating Capacity w/ Fan	970.90 MBh		

Cooling Coil (DX) Section

Evaporator Type	Cu-Al
Evaporator Coil Rows	6.00 Each
Evaporator Face Area	59.30 sq ft
Evaporator Face Velocity	767 ft/min

Inputs	
Design Airflow	45500 cfm
Entering Dry Bulb	77.00 F
Entering Wet Bulb	62.00 F
Entering Relative Humidity	42.65 %

Cooling Performance	
Leaving Coil Dry Bulb	53.69 F
Leaving Coil Wet Bulb	52.15 F
Leaving Unit Dry Bulb	57.61 F
Leaving Unit Wet Bulb	53.86 F
Gross Total Capacity	1273.07 MBh
Gross Sensible Capacity	1210.47 MBh
Gross Latent Capacity	62.60 MBh
Net Total Capacity	1085.49 MBh
Net Sensible Capacity	1022.89 MBh
Net Sensible Heat Ratio (%)	94.23 %

Supply Fan

Supply Fan Type	AF
Supply Fan Count	2
Supply Fan Motor HP	80 Hp (2-40 Hp Motors)
Supply Motor Count	2.00 Each
Supply Fan Motor Drive	1600 rpm
System Control	VAV (DTC) SF & EF/RF VFD w/ Bypass
Isolator Option	Spring isolators

Performance	
Design Airflow	45500 cfm
Supply Duct Static Pressure	2.000 in H2O
Component Static Pressure	3.228 in H2O
Return Duct Static Pressure	1.000 in H2O
Total Static Pressure	6.228 in H2O
Total Supply BHP	67.10 bhp
Operating Speed (RPM)	1541 rpm
Supply Fan Motor Heat	187.58 MBh

Outside Air & Relief Sections

Outside Air Section	
Outside Air Option	0-100% Economizer
Outside Air Control	Econ control w/reference enthalpy
Damper Option	Ultra low leak damper w/ FDD

Relief Section	
Airflow	40000 cfm
Return Duct Static Pressure	1.000 in H2O
Fan Option	100% - 40 Hp w/Statitrac
Actual BHP	35.48 bhp
Operating Speed (RPM)	787 rpm
Motor Drive	800 rpm
Isolator Option	Spring isolators

Acoustics

	63	125	250	500	1K	2K	4K	8K
Discharge Duct	94 dB	91 dB	100 dB	94 dB	90 dB	82 dB	78 dB	73 dB
Return Duct	85 dB	85 dB	91 dB	81 dB	76 dB	71 dB	67 dB	60 dB
Exhaust Fan	92 dB	89 dB	86 dB	87 dB	85 dB	82 dB	77 dB	70 dB

Controls & Service Options

Controls	
Communication Protocol	BACnet communication interface module

Service	
Cabinet Options	Access doors

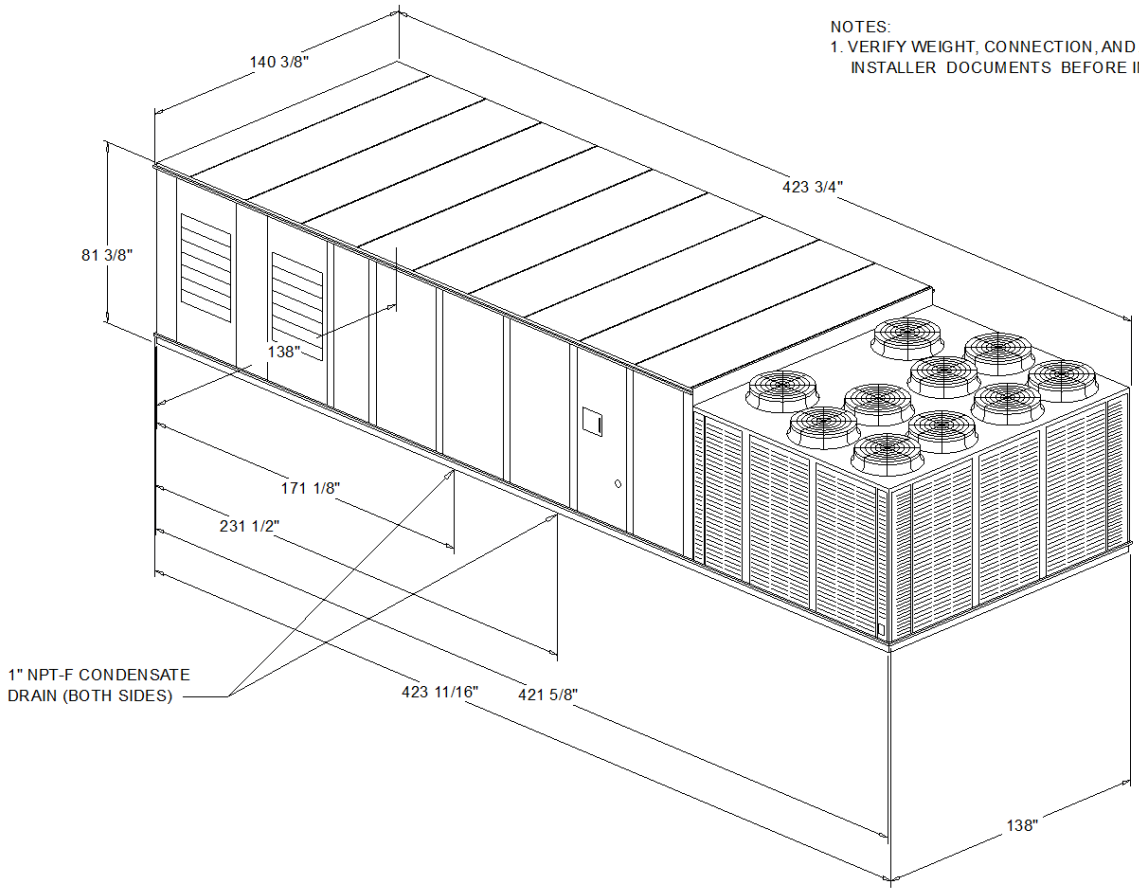
Accessories/Misc.

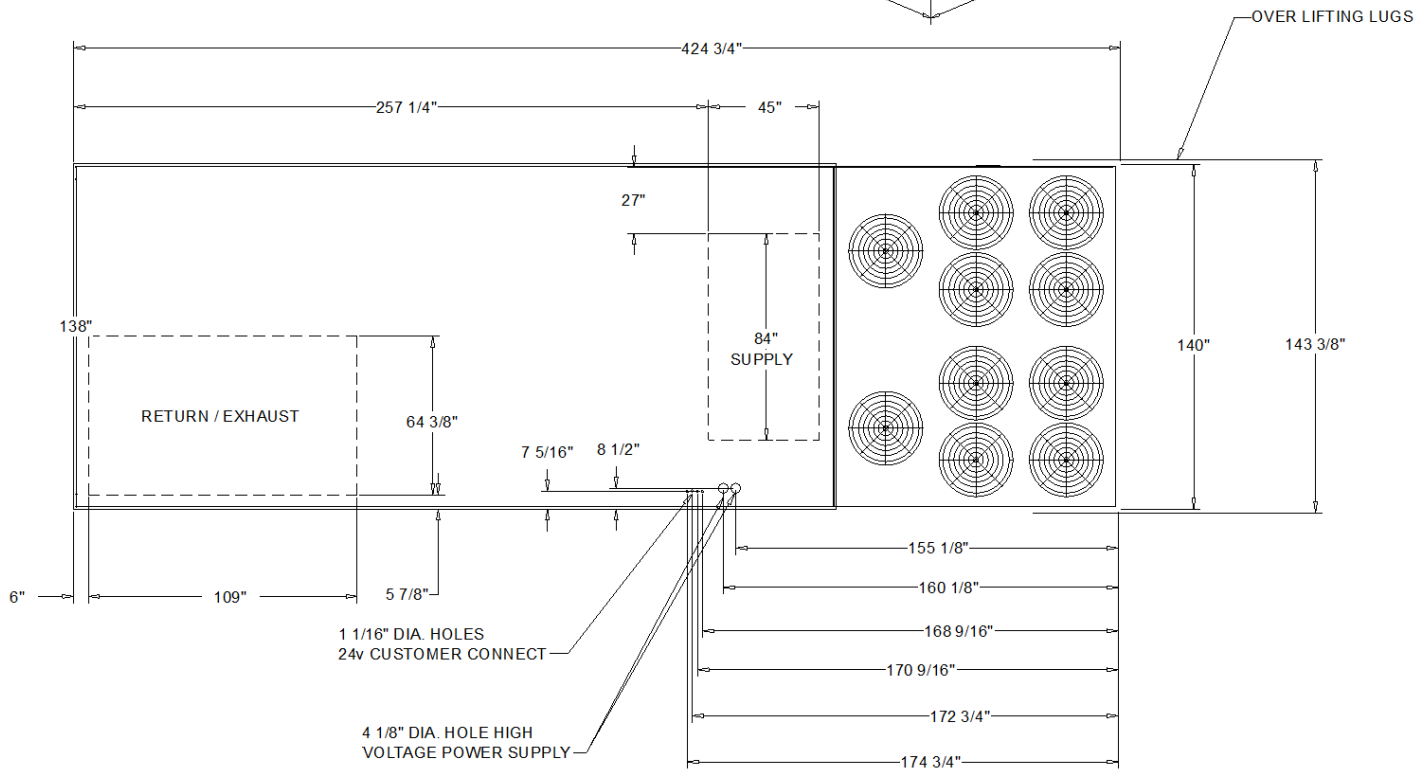
Start Up	Startup

Warranty

Labor Warranty (First Year)	Year 1 Labor Warranty	**Refrigerant Warranty (First Year)**	1st Year Refrigerant Warranty

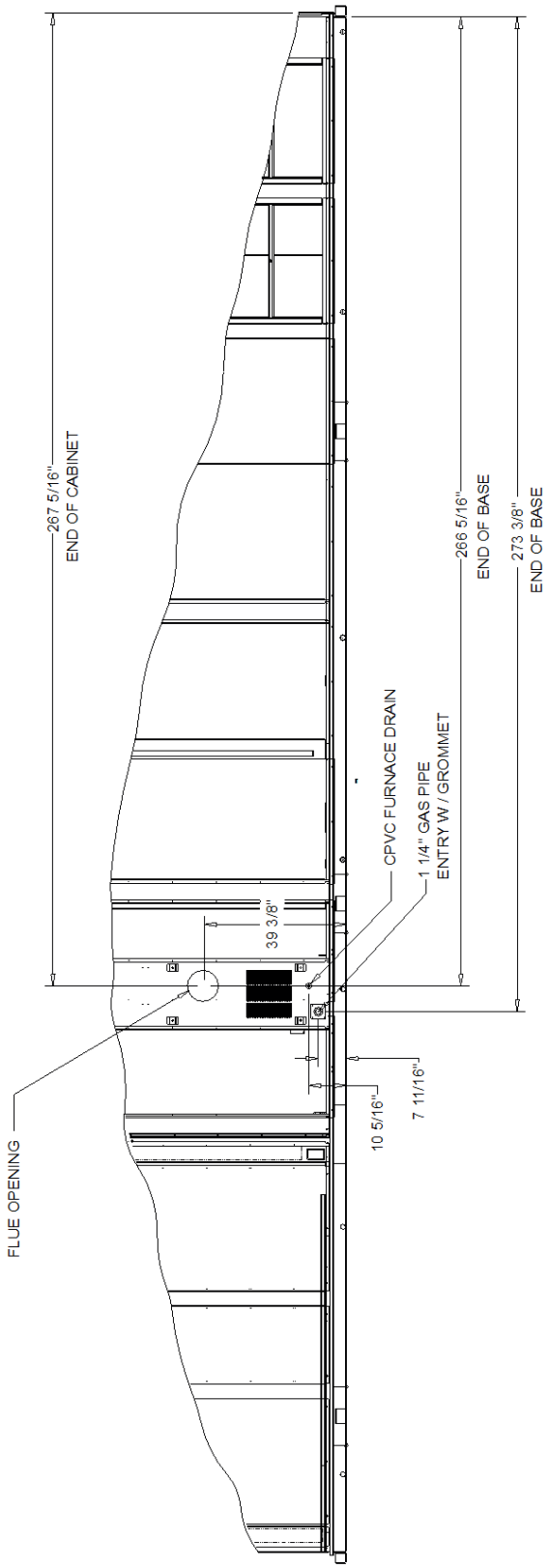
NOTES:
1. VERIFY WEIGHT, CONNECTION, AND ALL DIMENSION WITH INSTALLER DOCUMENTS BEFORE INSTALLATION





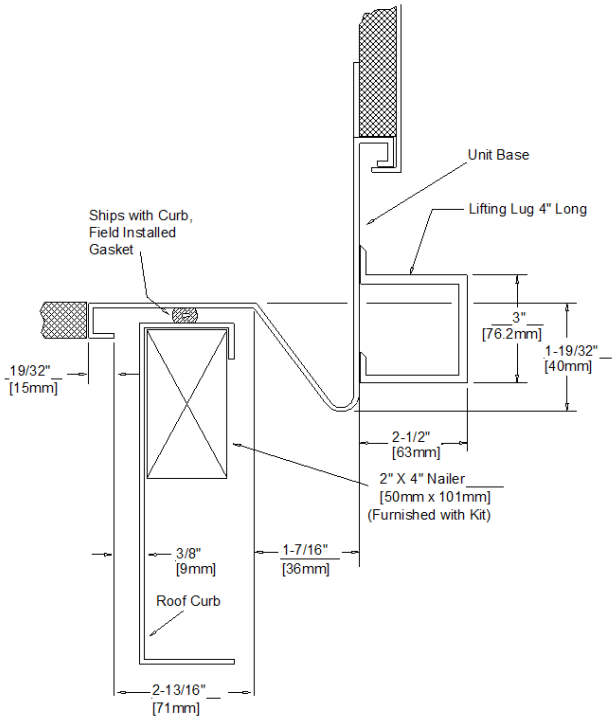
90 - 130 TON SELF- CONTAINED

PLAN VIEW DRAWING

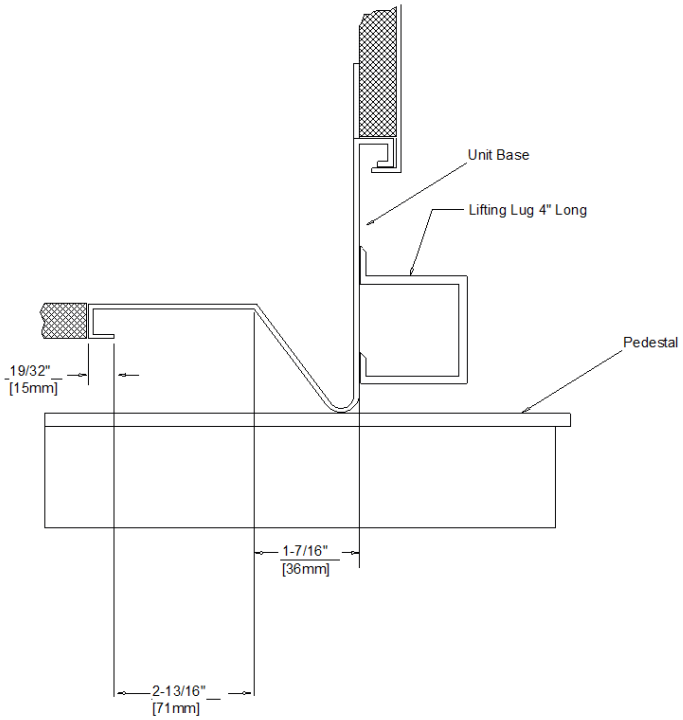


90 - 130 TON GAS HEAT
RIGHT SIDE OF UNIT

TYPICAL ROOF CURB AND BASE PAN DETAIL



TYPICAL PEDESTAL AND BASE PAN DETAIL



ELECTRICAL / GENERAL DATA

GENERAL DATA	
Tonnage:	115
Unit Operating Voltage Range:	414 -506
Unit Primary Voltage:	460
Unit Hertz:	60
Unit Phase:	3
EER	10.3 EER

ELECTRIC HEATER	
Electric Heater kw	
Electric Heater Full Load Amps	

HEATING - PERFORMANCE	
Heat Input:	250-1000
Heat Output:	200-800
Capacity Steps:	4:1

HEATING - GENERAL DATA	
Gas Inlet Pressure (in w.c.):	14.0 w.c. / 7.0 w.c.
Gas Pipe Connection Size:	1 1/4"

COMPRESSOR	Circuit #1	Circuit #2
Number:	2	2
Tons (Each) (5):	20/25	20/25
Compressor Rated Load Amps (Each):	37.20 A	45.00 A
Locked Rotor Amps (Each):	216.0 / 260.0	216.0 / 260.0

SUPPLY FAN MOTOR	
Number:	2
Horsepower (Each):	40.0
Supply Fan Motor Full Load Amps (Each):	49.00 A

EXHAUST FAN MOTOR	
Number:	1
Horsepower (Each):	40.0
Exhaust Fan Motor Full Load Amps (Each):	49.00 A

CONDENSOR FAN MOTOR	
Number:	10
Horsepower (Each):	1.0
Condensor Fan Motor Full Load Amps (Each):	18.00 A

REFRIGERANT	
Refrigeran Type:	R-410A
Factory Charge (Circuit #1) (6):	76.8 lb
Factory Charge (Circuit #2) (6):	76.8 lb

FILTERS - TYPE	
Type:	High Efficiency Rack-less Filter Yes
Furnished:	No
Number:	25
Recommended Size:	24" x 24" x 2"

FINAL FILTERS - TYPE	
Type:	
Furnished:	
Number:	
Recommended Size:	

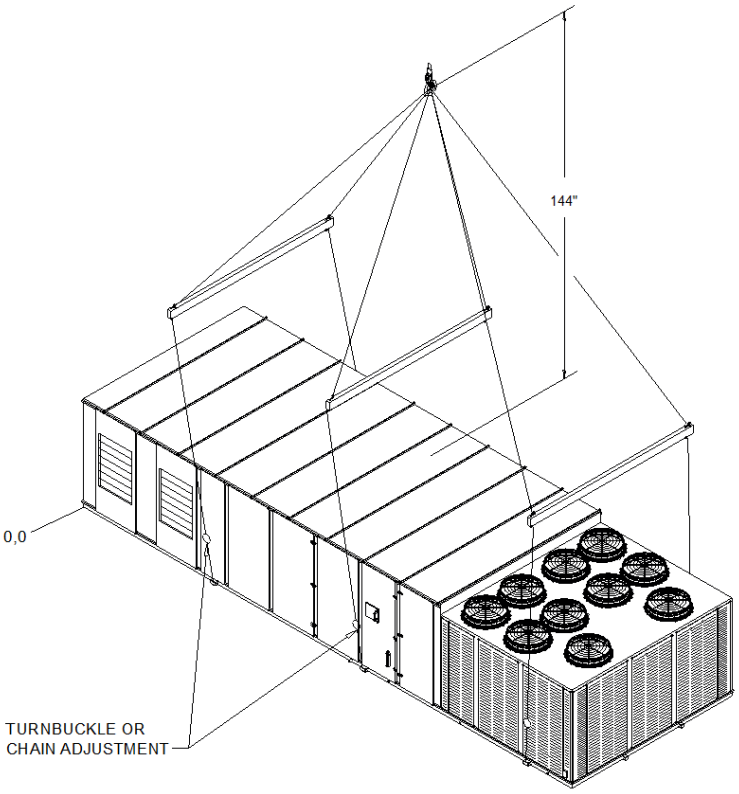
Cooling MCA = (1.25 x LOAD 1) + LOAD 2 + LOAD 4

Cooling MOP= (2.25 x LOAD 1) + LOAD 2 + LOAD 4

Cooling RDE= (1.5 x LOAD 1) + LOAD 2 + LOAD 4

Notes:

1. LOAD 1= Current of the largest motor (Compressor or Fan Motor); LOAD 2=Sum of the currents of all remaining motors
LOAD 3= FLA(Full Load Amps) of the electric heater; LOAD 4= Any other load rated at 1 amp or more.
2. For Electric Heat MCA, MOP, RDE values, calculate for both cooling and heating modes.
3. If selected Max Over Cur is less than the Min Cir Amp, then select the lowest maximum fuse size which is equal to or larger than the Min Cir Amp, provided the selected fuse size does not exceed 800 amps.
4. If the selected Recommended Dual Element fuse size is greater than the selected Max Over Cur Protection value, then select the Recommended Dual Element fuse size value to equal the Max Over Protection value.
5.. Compressor KW at AHRI rating conditions of 80/67 -95
6. Refrigerant charge is an approx. value. For a more precise value, see unit nameplate and service instructions.



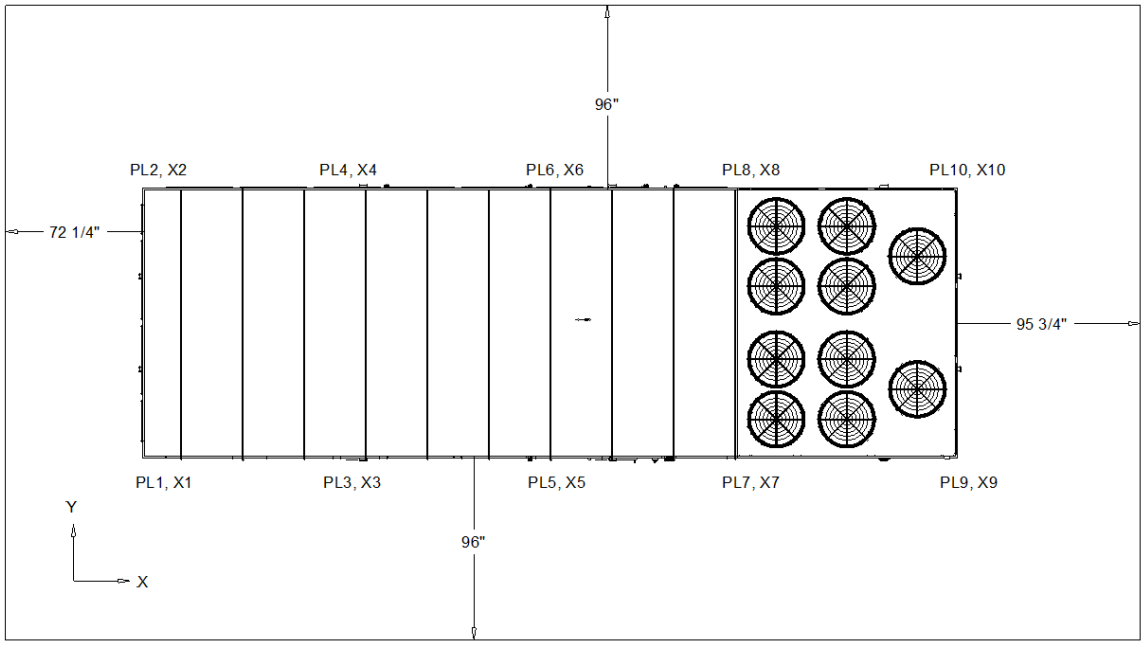
Calculated weight:	N/A	Point Load Location
Point Load 1:	N/A	N/A: N/A
Point Load 2:	N/A	N/A: N/A
Point Load 3:	N/A	N/A: N/A
Point Load 4:	N/A	N/A: N/A
Point Load 5:	N/A	N/A: N/A
Point Load 6:	N/A	N/A: N/A
Point Load 7:	N/A	N/A: N/A
Point Load 8:	N/A	
Point Load 9:	N/A	
Point Load 10:	N/A	
Total Weight:	N/A	
Center f Gravity x:	N/A	
Center of Gravity y:	N/A	

Notes:
1.The actual weight is stamped on the unit nameplate.
2. The weight shown represents the typical unit operating weight for the configuration selected. Estimated at +/- 10% of the nameplate weight.
3. Design special weights are not displayed. Any weight added through COD (Custom Order Design) will not be accounted in the +/- 10% estimate
4. When 2 or more units are to be placed side by side, the distance between the units should be increased to 150% of the recommended single unit clearance. The units should also be staggered to reduce span deflection & assure proper diffusion of exhaust air.

RIGGING

ISOMETRIC VIEW OF UNIT

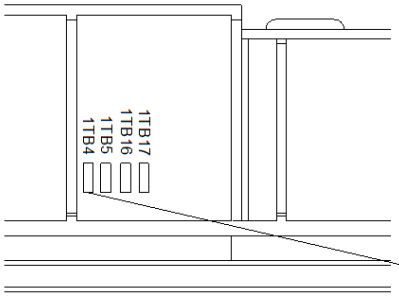
SERVICE CLEARANCE



SERVICE CLEARANCE

CENTER OF GRAVITY AND CLEARANCES

PLAN VIEW OF UNIT



⚠ WARNING

HAZARDOUS VOLTAGE!

DISCONNECT ALL ELECTRIC POWER INCLUDING REMOTE DISCONNECTS BEFORE SERVICING.

FAILURE TO DISCONNECT POWER BEFORE SERVICING CAN CAUSE SEVERE PERSONAL INJURY OR DEATH.

⚠ AVERTISSEMENT

VOLTAGE HASARDEUX!

DECONNECTEZ TOUTES LES SOURCES ELECTRIQUES INCLUANT LES DISJONCTEURS SITUES A DISTANCE AVANT D'EFFECTUER L'ENTRETIEN.

FAUTE DE DECONNECTER LA SOURCE ELECTRIQUE AVANT D'EFFECTUER L'ENTRETIEN PEUT ENTRAINER DES BLESSURES CORPORELLES SEVERES OU LA MORT.

⚠ CAUTION

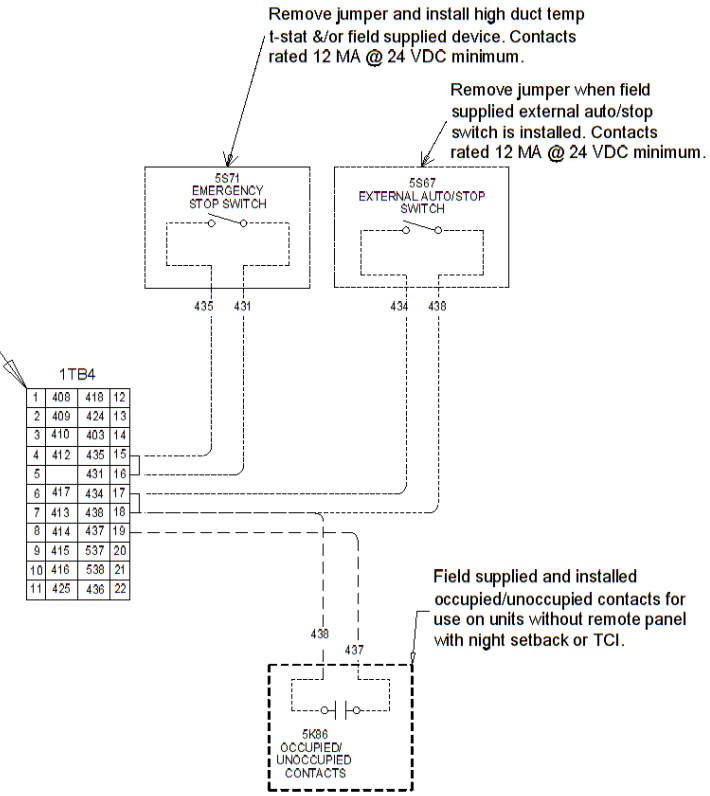
USE COPPER CONDUCTORS ONLY!

UNIT TERMINALS ARE NOT DESIGNED TO ACCEPT OTHER TYPES OF CONDUCTORS.

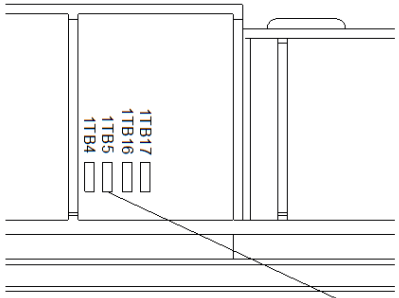
FAILURE TO DO SO MAY CAUSE DAMAGE TO THE EQUIPMENT.

IMPORTANT!
DO NOT ENERGIZE
UNIT UNTIL CHECK-OUT
AND START-UP PROCEDURE
HAS BEEN COMPLETED

DEVICE PREFIX LOCATION CODE	
AREA	LOCATION
1	INSIDE UNIT CONTROL BOX
2	CONDENSER SECTION
3	AIR HANDLER SECTION
4	HEATING SECTION
5	EXTERNAL FIELD MOUNTED DEVICE



Note: All wiring and components shown dashed to be supplied and installed by the customer in accordance with local electrical codes.



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DEVICE PREFIX LOCATION CODE	
AREA	LOCATION
1	INSIDE UNIT CONTROL BOX
2	CONDENSER SECTION
3	AIR HANDLER SECTION
4	HEATING SECTION
5	EXTERNAL FIELD MOUNTED DEVICE

1TB5

1	489	475	12
2	490	476	13
3	523	528	14
4	524	529	15
5	525	530	16
6	526	531	17
7	527	532	18
8	549	533	19
9	550	534	20
10	427	443	21
11	426	444	22

534 533
TRACER COMMUNICATIONS

Required with TCI Module option.
Use shielded twisted pair wire.

Note: All wiring and components shown dashed to be supplied and installed by the customer in accordance with local electrical codes.

TRANE

Job Name: Marion County Courthouse - SN C99J189966M
Prepared By:
Unit Tag: AC-3
Quantity: 1

General
Units shall be specifically designed for outdoor rooftop installation on a roof curb and be completely factory assembled and tested, piped, internally wired, fully charged with R-410A compressor oil and shipped in one piece. Units shall be available for direct expansion cooling only, or direct expansion cooling with natural gas, electric, hot water or steam heating. Filters, outside air system, exhaust air system, optional non-fused disconnect switches and all operating and safety controls shall be furnished factory installed. All units shall be cULus approved and factory run tested. Cooling capacity shall be rated in accordance with AHRI Standard 360. All units shall have decals and tags to aid in service and indicate caution areas. Electrical diagrams shall be printed on long life water resistant material and shall ship attached to control panel doors.

Unit Casing
Exterior panels shall be zinc coated galvanized steel, phosphatized and painted with a slate gray air-dry finish durable enough to withstand a minimum of 672 hours consecutive salt spray application in accordance with standard ASTM B117. Screws shall be coated with zinc-plus-zinc chromate. Heavy gauge steel hinged access panels with tiebacks to secure door in open position shall provide access to filters and heating sectionsInterior surfaces or exterior casing members will have 1/2"" [12.7 mm] fiberglass insulation. Unit base will be watertight with 14 gauge formed load bearing members, formed recess and curb overhang. Unit lifting lugs will accept chains or cables for rigging. Lifting lugs will also serve as unit tie down points."

Hinged Access Doors
Hinged access doors shall provide easy access to supply fan, filters, exhaust fan, and heating section.These access doors shall feature double wall construction with dual density insulation sandwiched between heavy gauge galvanized steel panels for strength and durability

Scroll Compressors
The Trane Scroll compressor shall be industrial grade, direct drive 3600 RPM maximum speed scroll type. The motor shall be suction gas-cooled hermetic design. Compressor shall have centrifugal oil pump with dirt separator, oil sight glass, and oil charging valve.
Compressor shall also be provided with thermostatic motor winding temperature control to protect against excessive motor temperatures resulting from over-/under-voltage or loss of charge, high and low pressure cutouts, and reset relay.

Condenser Fans and Motors
All condenser fans shall be vertical discharge, direct drive fans, statically balanced, with aluminum blades and zinc plated steel hubs. Condenser fan motors shall be three-phase motors with permanently lubricated ball bearings, built-in current and thermal overload protection and weathertight slingers over motor bearings.

Evaporator Coil
Internally enhanced seamless copper tubing of 1/2 "" [12.7 mm] O.D. shall be mechanically bonded to heavy-duty aluminum fins of configured design. The coils shall be be equipped with thermal expansion valves and factory pressure and leak tested.

Air-Cooled Condenser Coil
Condenser coils shall have all Aluminum Microchannel coils. All coils shall be leak tested at the factory to ensure pressure integrity. The condenser coil is pressure tested to 650 psig. Subcooling circuit(s) shall be provided as standard.

Gas-fired heating option, 4:1 Modulating Gas Heat
All gas-fired units shall be completely assembled and have a wired gas fired heating system integral within unit. Units shall be cULus approved specifically for outdoor applications downstream from refrigerant cooling coils. All gas piping shall be threaded connection with a pipe cap provided. Gas supply connection shall be provided through the side or bottom of unit. All units shall be fire tested prior to shipment. Heat Exchanger shall be tubular two pass design with stainless steel primary and secondary surfaces made from grades of stainless steel suitable for condensing situations. Free floating design shall eliminate expansion and contraction stresses and noises. Gasketed cleanout plate shall be provided for cleaning of tubes/turbulators. Heat exchanger shall be factory pressure and leak tested. Burner shall be a stainless steel industrial type with an air proving switch to prevent burner operation if the burner is open for maintenance or inspection. Ceramic cone shall be provided to shape the flame to prevent impingement on sides of heat exchanger drum. Burner assembly shall house ignition and monitoring electrode. Combustion Blower shall be centrifugal type fan to provide air required for combustion. Fan motor shall have built-in thermal overload protection. Gas Safety Controls shall include electronic flame safety controls to require proving of combustion air prior to ignition sequence which shall include a 60 second pre-purge cycle. Pilot ignition shall be provided on 1000 MBh heat exchanger units. Continuous electronic flame supervision shall be provided as standard. The heater shall have a turn down ratio of 4 to 1.

Supply Fan (90-130T)
All supply fans shall have two independent fan assemblies with double inlet, air foil fan, motor and fixed pitch sheave drive. All fans shall be statically and dynamically balanced and tested in factory. Supply fans shall be test run in unit as part of unit test. Unit shall reach rated rpm before fan shaft passes through first critical speed. Fan shafts shall be mounted on two grease lubricated ball bearings designed for 200,000 hours average life. Optional extended grease lines shall allow greasing of bearings from unit filter section. Fan motor and fan assembly shall be mounted on common base to allow consistent belt tension with no relative motion between fan and motor shafts. Entire assemblies shall be completely isolated from unit and fan board by two-inch deflection spring isolators. All 60 Hz supply fan motors meet the Energy Independence Security Act of 2007 (EISA)

Variable Air Volume Supply Air Temperature Control
The unit shall be provided with all the necessary controls to operate a variable air volume rooftop from the discharge air temperature, including discharge air microprocessor controller and discharge air sensor. The microprocessor controller shall coordinate the economizer control and the stages of cooling with zone or outdoor air reset capabilities and an adjustable control band to fine-tune the control to specific applications.

Variable Frequency Drive
Unit shall include factory-installed and tested variable frequency drive[s] (VFD) to provide motor speed modulation. The VFD shall receive a 0-10VDC speed signal from the unit controller. The drive will respond to the signal by accelerating or decelerating to maintain the controlling set point (duct static, space pressure, etc). VFD shall also include the following features:

1. Designed, constructed, and tested in accordance with NEMA ICS, NFPA, and IEC standards and housed in a plastic IP20 enclosure.

2. DC link reactors on both the positive and negative rails of the DC bus equal to 3% impedance to minimize power line harmonics.

3. Full rated output current continuously - 110% of rated current for 60 seconds and 160% of rated current for up to 0.5 second while starting.

4. Isolation between the Drive's power circuitry and control circuitry to ensure operator safety and to protect connected electronic control equipment from damage caused by voltage spikes, current surges, and ground loop currents.

5. Audible noise reduction through automatic adjustment of the carrier frequency and frequency avoidance.

6. Rated at 40C with a standard operating range of -10 to 50C (14 to 124F) ambient temperatures and 0 to 95% relative humidity

7. Self-diagnostics and motor protections such as: cULus listed overload, phase loss, and internal thermal overload.

8. Off/Stop and Auto/Start selector switches to start and stop the AC Drive and determine the speed reference.
   a. On units with bypass, an AC Drive/Off/Bypass hand selector switch shall be provided in the unit control box
   b. In DRIVE mode speed reference shall be provided by a 0-10 VDC analog input

9. A keypad interface which shall be programmable by language and feature multiple lines for easy reading.

10. Controlled and/or accessible points such as AC Drive Start/Stop, speed reference, and fault diagnostics.

11. Meter points such as motor power in HP, motor power in kW, motor kW-hr, motor current, motor voltage, hours run, DC link voltage, thermal load on motor,
    Thermal load on AC
    Drive and Heatsink temperature.
12. Troubleshooting features such as:
    a. AC Drive memory storage of the last 10 faults and related operational data

    b. Four simultaneous displays: frequency or speed, run time, output amps and output power

    c. Keypad which shall display: Reference Signal Value, Output Frequency in Hz or percent, Output Amps, Motor HP, Motor kW, kW

13. Coated circuit boards for protection against corrosive environments

14. Field readable BACnet points to allow for communication of stauts, setpoints and diagnostics to the BAS.

Two-inch Spring Isolators
Supply and Exhaust fan (if applicable) assemblies shall be isolated with two-inch nominal deflection to reduce transmission of vibrations

100 Percent Exhaust with Statitrac
Two, double-inlet, forward-curved fans shall be mounted on a common shaft with fixed sheave drive. All fans shall be dynamically balanced and tested in factory before being installed in unit. Exhaust fan shall be test run as part of unit final run test. Unit shall reach rated rpm before fan shaft passes through first critical speed. Fan shaft shall be mounted on two grease lubricated ball bearings designed for 200,000-hour average life. Optional extended grease lines shall be provided to allow greasing of bearings from unit filter section. Fan motor and assembly shall be mounted on common base to allow consistent belt tension with no relative motion between fan and motor shafts. Entire assembly shall be completely isolated from unit and fan board by double deflection, rubber in shear isolators or spring isolation on motor sizes larger than five hp. For both CV and VAV rooftops, the 100 percent modulating exhaust discharge dampers (or VFD) shall be modulated in response to building pressure. A differential pressure control system, (Statitrac), shall use a differential pressure transducer to compare indoor building pressure to outdoor ambient atmospheric pressure. The FC exhaust fan shall be turned on when required to lower building static pressure setpoint. The (Statitrac) control system shall then modulate the discharge dampers (or VFD) to control the building pressure to within the adjustable, specified dead band that shall be adjustable at the Human Interface Panel. All 60 Hz exhaust fan motors meet the Energy Independence Security Act of 2007 (EISA).

0-100 Percent Economizer
Automatically modulating return and outside air dampers assist in the maintaining of the control temperature setpoint to allow "free" cooling. The economizer is equipped with an automatic lockout when the outdoor enthalpy/temperature is not suitable for space temperature control. Minimum position is standard and adjustable with either the Human Interface Control, remote potentiometer, or through the building management system. A spring return actuator insures closure of the outside air dampers during shutdown or power interruption. Mechanical cooling is available to assist the economizing mode. Low leak dampers are standard with a leakage rate of 2.5 percent of nominal airflow of 400 Cfm/ton [189 L/s] per ton at a static pressure of 1" [25.8 mm] w.c.

0-100 percent modulating economizer
Operated through the primary temperature controls to automatically utilize OA for "free" cooling. Automatically modulated return and OA dampers shall maintain proper temperature in the conditioned space. Economizer shall be equipped with an automatic lockout when the outdoor high ambient temperature is too high for proper cooling. Minimum position control shall be standard and adjustable at the Human Interface Panel or with a remote potentiometer or through the building management system. A spring return motor shall ensure closure of OA dampers during unit shutdown or power interruption. Mechanical cooling shall be available to aid the economizer mode at any ambient. Low leak economizer dampers shall be standard with a leakage rate of 2.5 percent of nominal airflow (400 CFM/ton) at 1" wg. static pressure.

Economizer Reference Enthalpy Control
An outdoor enthalpy sensor shall be provided to compare the total heat content of outdoor air to a locally adjustable setpoint. The setpoint shall be programmed at the human interface , or remote human interface, to determine if the outdoor enthalpy condition is suitable for economizer operation.

Ultra-Low Leak Damper
Economizer return and fresh air dampers shall be provided with horizontal airfoil blades and spring-return actuators. The economizer shall have a functional life of 60,000 opening and closing cycles. Dampers shall be AMCA 511 Class 1A certified with a maximum leakage rate of 3 CFM/sqft at 1.0 inWC pressure differential thus exceeding requirements of ASHRAE 90.1-2013, California Title 24-2013, and IECC-2012. Fault Detection and Diagnostic (FDD) control will also be provided with Ultra Low Leak Economizers. FDD control monitors the commanded position of the economizer compared to the feedback position of the damper. If the damper position is outside +/- 10% of the commanded position, a diagnostic is generated.

Ultra-Low Leak motorized exhaust dampers will be provided when the Ultra-Low Leak Economizer is ordered with an exhaust/return option that includes motorized dampers. Ultra Low Leak motorized exhaust dampers will be AMCA 511 Class 1A certified with a maximum leakage rate of 3 CFM/sq-ft at 1.0 inWC pressure differential. This exceeds the most stringent requirements of ASHRAE 90.1 and IECC (4 CFM/sq-ft at 1.0 inWC pressure differential).

High efficiency throwaway, MERV 8
Filters are 2"" [50.8 mm] thick, MERV 8, UL class 2 high efficiency pleated media type. Filters have an average efficiency of 25 to 30 percent, and are rated in excess of 90 percent average synthetic dust weight arrestance, when tested in accordance with ASHRAE 52.76 and 52.1 test methods. Filters mounted in galvanized steel rack.

4" Vertical Filter Rack with Filters
Standard size 4" filters shall be provided in a factory installed filter rack.

Controls
The rooftop unit shall utilize a DDC microprocessor control system which is suitable for CV and VAV applications. The control system shall be factory installed in the main control panel with the necessary internal controls and run tested. Terminal blocks for field power wiring connections shall be standard. Units shall provide a location for a non-fused disconnect switch with an external handle for safety. Unit mounted microprocessor controls shall provide compressor anti-short cycle protection. The unit shall be equipped with a Human Interface Panel with a 16 key keypad, a 2 line by 40 character English display to provide the operator with full adjustment and display of control data function. The unit controls can be used as a stand-alone controller or as part of a building management system.

BACnet Communication Interface Module (BCI)
Shall provide control and monitoring of the rooftop by Tracer SC or a 3rd party building management system utilizing BACnet protocol.

Unit Non-Fused Disconnect
External handle shall enable the operator to disconnect unit power with the control box door closed for safety.

Powered Convenience Outlet
A15A, 115V Ground Fault Interrupter convenience
outlet shall be factory installed. It shall be wired and powered from a factory mounted transformer. Unit-mounted, non-fused disconnect with external handle shall be furnished with factory powered outlet.

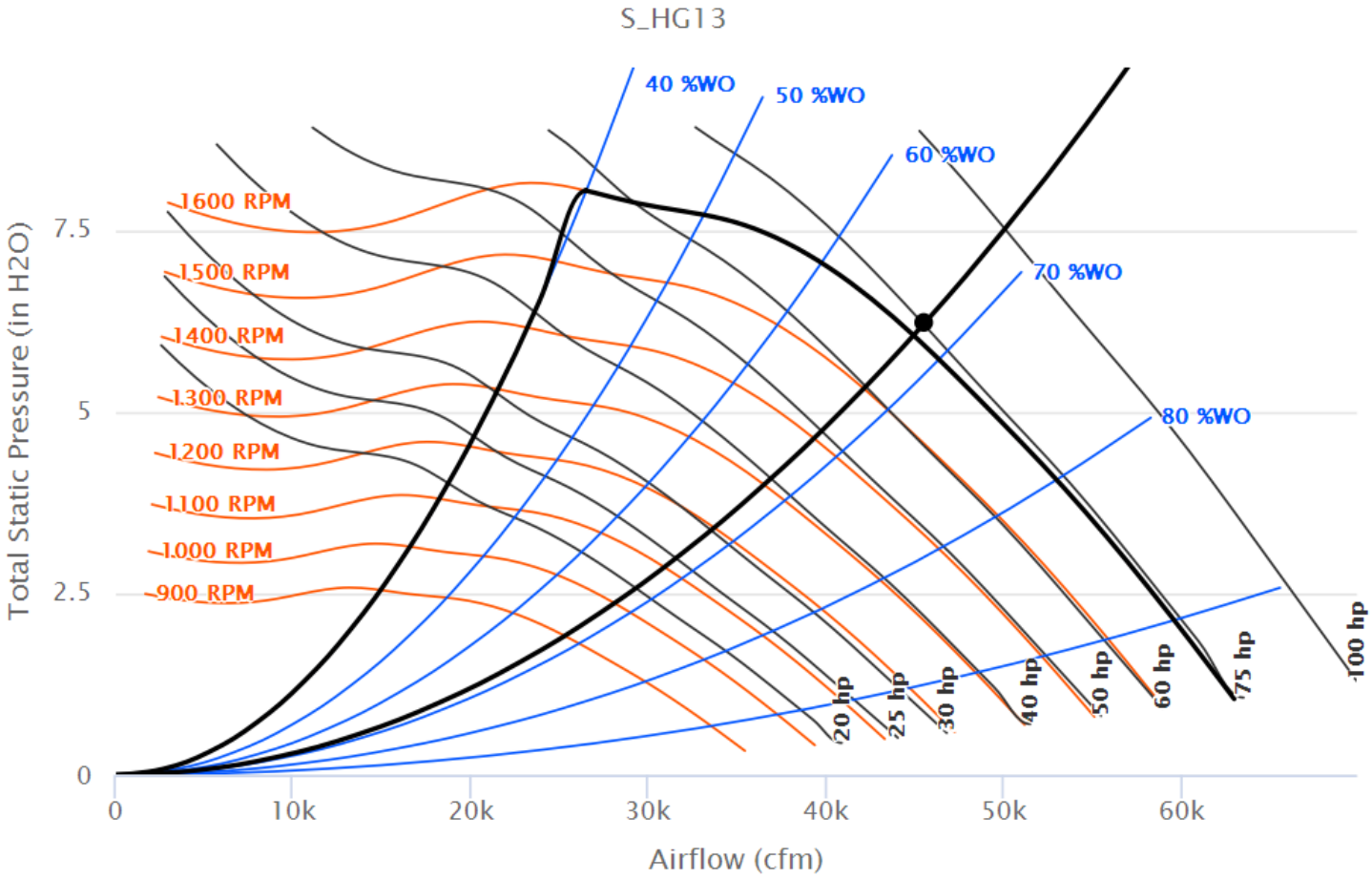
Unit Interrupt Rating (Standard Short Circuit Current Rating-SCCR)
A 5,000 Amp rating shall be applied to the unit enclosure using a non-fused circuit breaker for disconnect switch purposes. Fan motors, compressors, and electric heat circuits shall be provided with protective devices that will provide the unit rated level of fault protection. The unit shall be marked with approved cULus markings and will adhere to cULus regulations.

Temperature Thermistor
Temperature thermistor is used to communicate temperature changes in either the zone, return air, supply air or outside ambient.

Equipment manufactured by Trane that includes required start-up and sold in North America will not be warranted by Trane unless Trane or its authorized independent Trane commercial sales office performs the startup on the equipment.

Fan Details

Unit Size		**Operating Brake Power**	67.10 bhp
Operating Airflow	45,500 cfm	**Altitude**	0.00 ft
Operating Static Pressure	6.228 in H2O	**Design Temp.**	77.00 F
Operating RPM	1,541 rpm		



Unit Overview

Unit Function	Tonnage	EER @ AHRI	IEER @ AHRI	System Power	Elevation
Natural Gas Heat	40 ton Air cooled	10.7 EER	15.6 EER	50.01 kW	0.00 ft

Installed Weight
9117.1 lb

Unit Features

Capacity/Efficiency Option	eFlex- Variable Speed Compressor
Filters	Throwaway Filters
Filters	4" Deep filter rack and filters
Agency Approval	cULus

Unit Electrical

Voltage/Phase/Frequency	460/60/3
Unit Mounted Power Connection / SCCR Rating	Unit disconnect switch (nonfused)
Unit Mounted Power Connection	Factory-Power 15A GFI convenience outlet

Condenser Fans FLA	7.20 A
Supply Fan FLA	24.70 A
Supply Fan Motor Count	1
Exhaust/Return Fan FLA	9.80 A
Other FLA	2.00 A

Compressor 1 RLA	13.10 A
Compressor 1 Count	1.00 Each
Compressor 2 RLA	15.90 A
Compressor 2 Count	1.00 Each
Compressor 3 RLA	26.00 A
Compressor 3 Count	1.00 Each

Circuit 1			
MCA	**MOP**	**DSS**	**RDE**
105.20 A	125.00 A	113.00 A	125.00 A

Condensing Section

Capacity/Efficiency Option	eFlex- Variable Speed Compressor	**Ambient Control**	Standard ambient control
Refrigerant Type	R-410A refrigerant	**Design Ambient Dry Bulb**	97.00 F
Refrigerant Charge Circuit 1	26.8 lb	**Outdoor Fan Type**	Prop
Refrigerant Charge Circuit 2	29.8 lb	**Outdoor Fan Drive**	Direct

Heating Section

Function	Natural Gas Heat	**Heating EAT**	70.00 F
Heat Capacity	4:1 Mod. High Gas Heat	**Heating LAT**	120.14 F
Input Heating Capacity	850.00 MBh	**Heating DeltaT**	50.14 F
Output Heating Capacity	680.00 MBh		
Output Heating Capacity w/ Fan	680.00 MBh		

Cooling Coil (DX) Section

Evaporator Type	Cu-Al
Evaporator Face Area	32.50 sq ft
Evaporator Face Velocity	385 ft/min

Inputs	
Design Airflow	12500 cfm
Entering Dry Bulb	80.00 F
Entering Wet Bulb	67.00 F

Cooling Performance	
Leaving Coil Dry Bulb	56.75 F
Leaving Coil Wet Bulb	55.32 F
Leaving Unit Dry Bulb	59.90 F
Leaving Unit Wet Bulb	56.56 F
Gross Total Capacity	37.90 tons
Gross Sensible Capacity	324.40 MBh
Gross Latent Capacity	130.45 MBh
Net Total Capacity	411.48 MBh
Net Sensible Capacity	281.03 MBh
Net Sensible Heat Ratio (%)	68.30 %

Supply Fan

Supply Fan Type	FC
Supply Fan Count	2.00 Each
Airflow Direction	Std (Downflow) Supply & Vert (Top)Return
Supply Fan Motor HP	20 hp FC
Supply Motor Count	1
Supply Fan Motor Drive	1100 rpm
System Control	VAV (DTC) SF & EF/RF VFD w/ Bypass
Isolator Option	2.00" [51mm] Spring isolators

Performance	
Design Airflow	12500 cfm
Supply Duct Static Pressure	2.000 in H2O
Total Supply Static Pressure	3.833 in H2O
Total Supply BHP	15.51 bhp
Operating Speed (RPM)	1086 rpm
Supply Fan Efficiency	48.60 %
Supply Fan Motor Heat	43.37 MBh

Outside Air & Relief Sections

Outside Air Section	
Outside Air Option	0-100% Economizer
Outside Air Control	Economizer control w/ reference enthalpy
Damper Option	Ultra Low Leak Damper

Relief Section	
Airflow	12500 cfm
Return Duct Static Pressure	1.000 in H2O
Fan Option	100% -Exhaust 7.5 Hp w/Statitrac
Actual BHP	4.07 bhp
Operating Speed (RPM)	636 rpm
Motor Drive	600 rpm
Isolator Option	2.00" [51mm] Spring isolators

Acoustics

	63	125	250	500	1K	2K	4K	8K
Ducted Discharge (Supply)	97 dB	102 dB	93 dB	87 dB	82 dB	78 dB	72 dB	64 dB
Ducted Inlet (Return)	93 dB	82 dB	78 dB	74 dB	69 dB	66 dB	62 dB	62 dB
Outdoor Noise	98 dB	96 dB	94 dB	92 dB	88 dB	86 dB	83 dB	78 dB

Acoustic Notes	
Outdoor includes all compressors and condenser fans running with any Exhaust or Return fans running at full exhaust	Outdoor Noise data conform to AHRI 270/370
	Octave Band Sound Power in dB re 1 pW
Supply and Return data taken in accordance with AHRI Standard 260-2012	

Weights

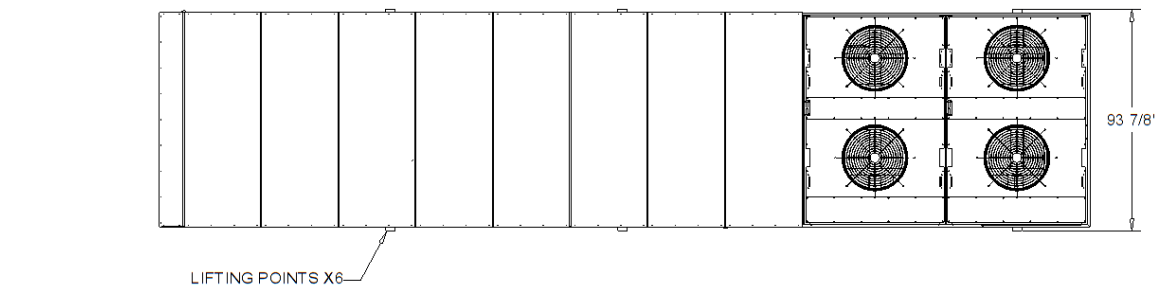
Total Installed Weight	9117.1 lb	**Installed Point Load Weight 1**	704.1 lb
Center of Gravity - X	17.01 ft	**Installed Point Load Weight 2**	774.1 lb
Center of Gravity - Y	3.92 ft	**Installed Point Load Weight 3**	795.5 lb
Installed Point Load X1 Location	4.000 in	**Installed Point Load Weight 4**	865.5 lb
Installed Point Load X2 Location	101.000 in	**Installed Point Load Weight 5**	876.6 lb
Installed Point Load X3 Location	187.000 in	**Installed Point Load Weight 6**	946.5 lb
Installed Point Load X4 Location	274.000 in	**Installed Point Load Weight 7**	958.5 lb
Installed Point Load X5 Location	370.000 in	**Installed Point Load Weight 8**	1028.5 lb
Installed Point Load Y1 Location	4.000 in	**Installed Point Load Weight 9**	1049.0 lb
Installed Point Load Y2 Location	87.000 in	**Installed Point Load Weight 10**	1118.9 lb

Controls & Service Options

Controls		Service	
Communication Protocol	BACnet communication interface module	**Cabinet Options**	IRU w/ galv - w/ access doors

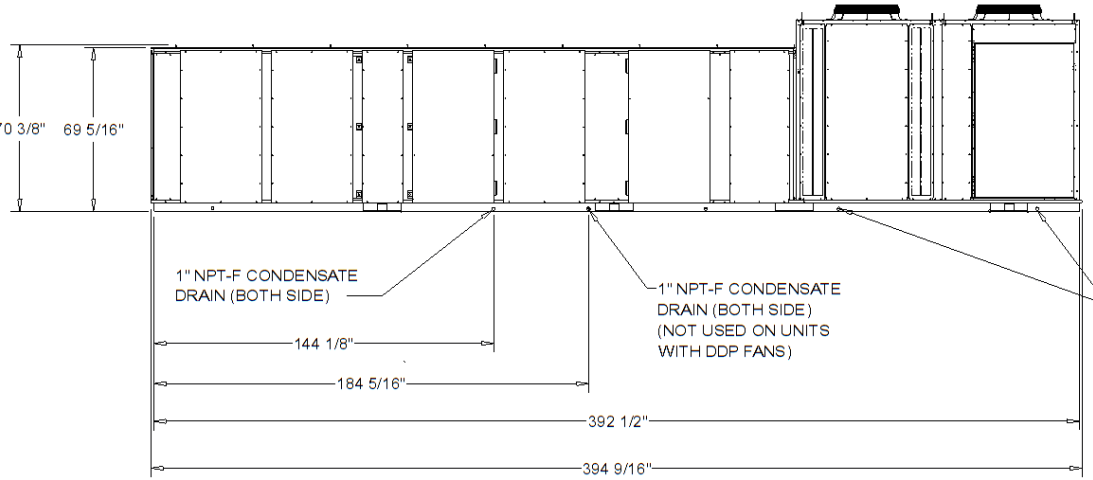
AHRI Certification

Packaged Rooftop units cooling, heating capacities and efficiencies are rated within the scope of the Air-Conditioning, Heating & Refrigeration Institute (AHRI) Certification Program and display the AHRI Certified® mark as a visual confirmation of conformance to the certification sections of AHRI Standard 340-360 (I-P) and ANSIZ21.47 and 10 CFR Part 431 pertaining to Commercial Warm Air Furnaces. Certified units may be found in the AHRI directory at www.ahridirectory.org

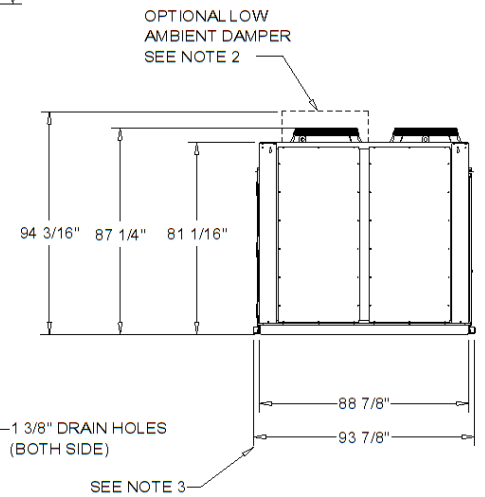


40 TON PLAN VIEW

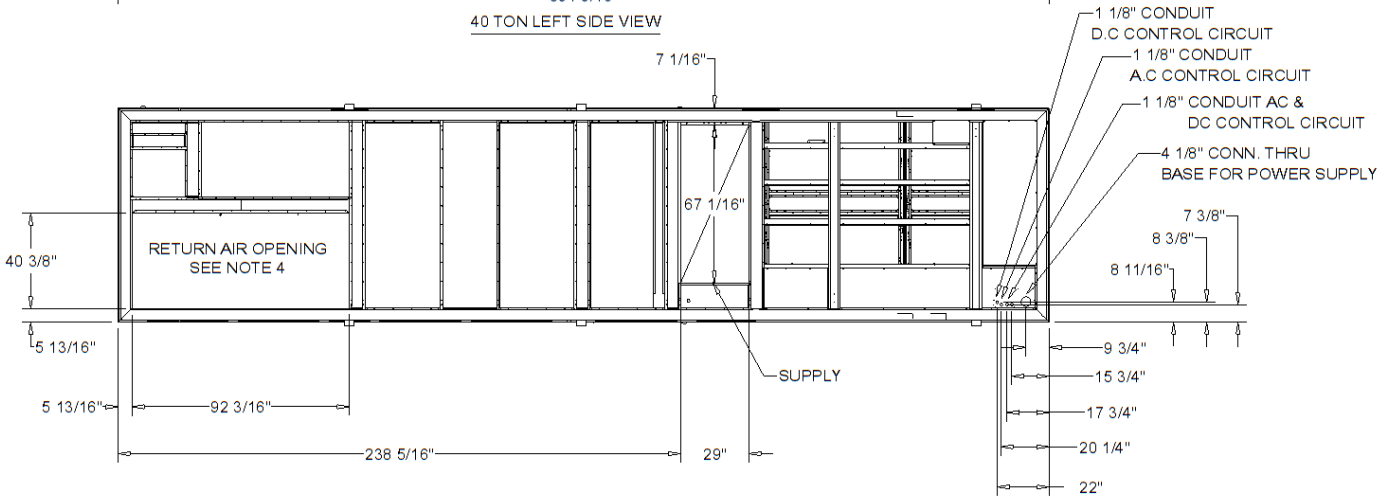
NOTES:
1. VERIFY WEIGHT, CONNECTION, AND ALL DIMENSION WITH INSTALLER DOCUMENTS BEFORE INSTALLATION
2. LOW AMBIENT DAMPER ONLY COMES WITH SELECTED UNIT .
3. OVERALL UNIT WIDTH INCREASES 5/8" BEYOND LIFTING LUG WITH ULTRA LOW LEAK POWER EXHAUST DAMPERS
4. RETURN AIR OPENING CONFIGURATION FOR USES WITH NO AIR OPTION, BAROMETRIC RELIEF, AND EXHAUST FAN.
5. IF FIELD CONVERTING SUPPLY & RETURN OPENING(S) TO HORIZONTAL OR VERTICAL AIRFLOW, FACTORY MUST VERIFY IF UNIT OPTIONS WILL ALLOW IT. FACTORY INSTALLATION IS ALWAYS RECOMMENDED.



40 TON LEFT SIDE VIEW

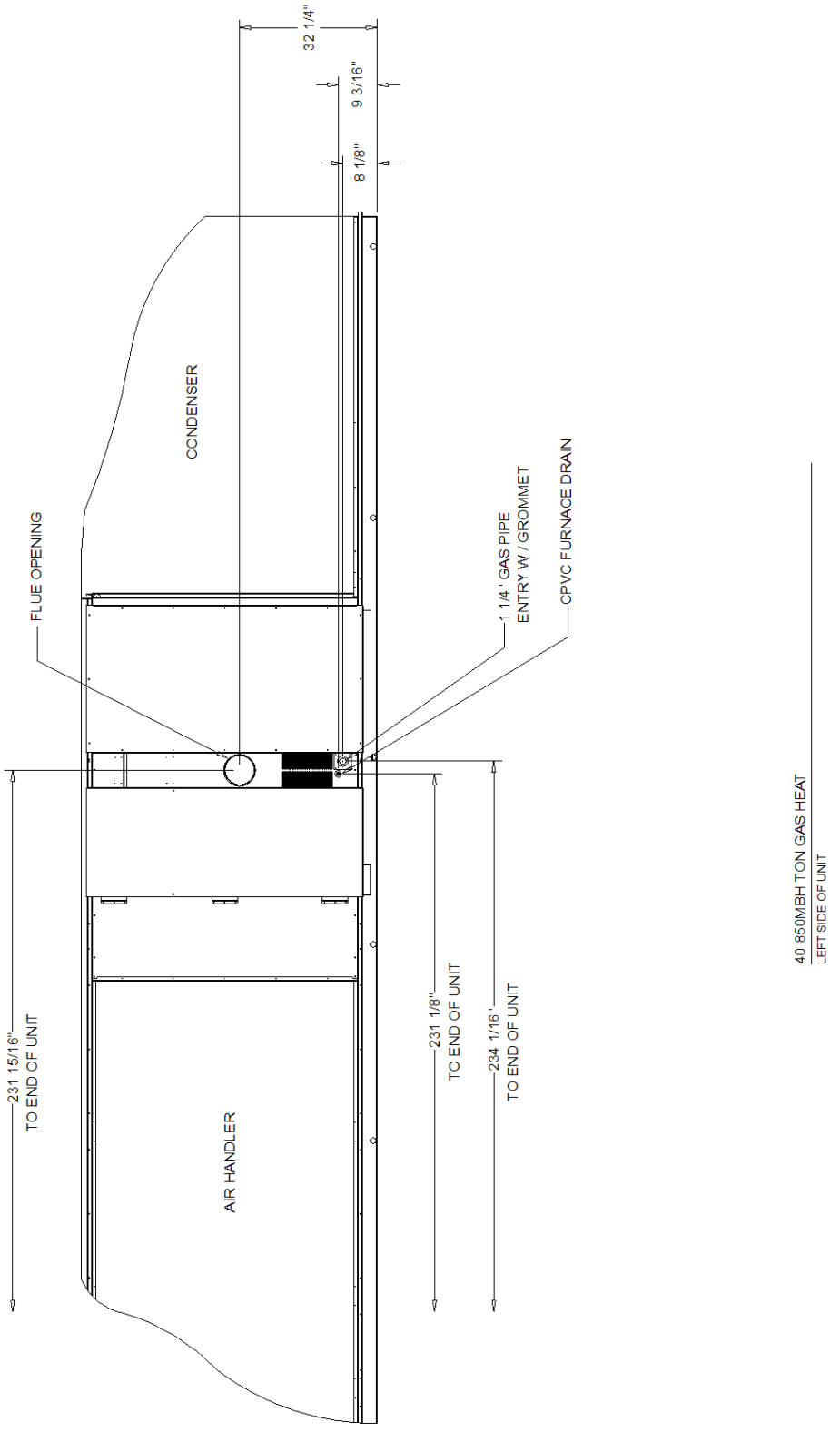


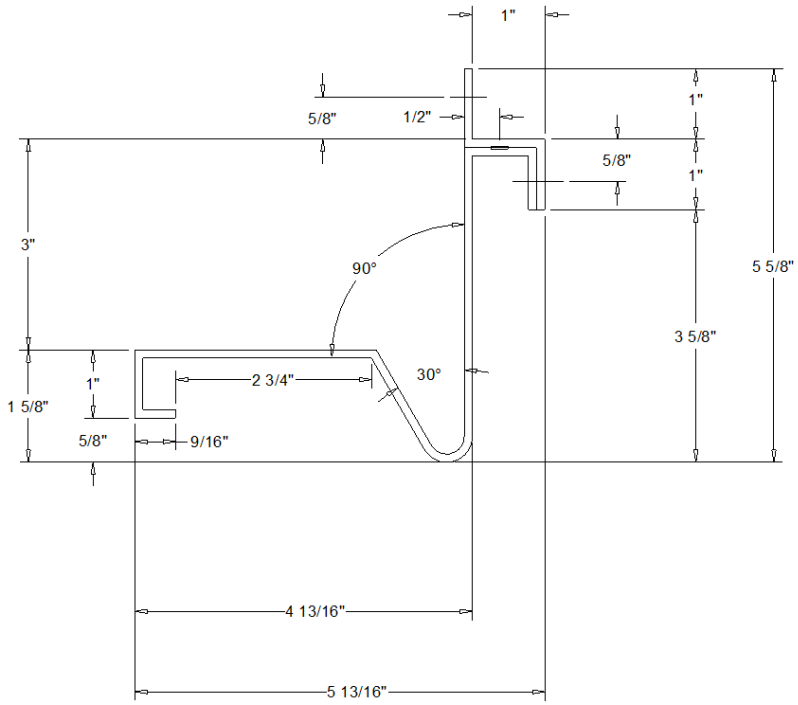
40 TON FRONT VIEW



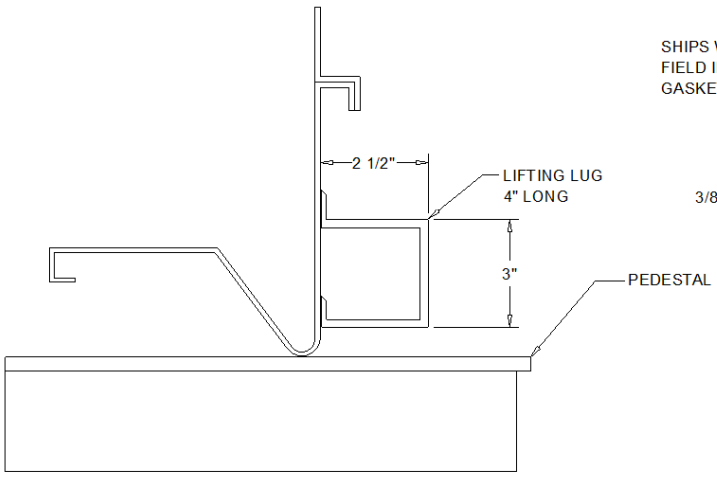
40 TON PLAN VIEW OF UNIT

Job Name: Marion County Courthouse - SN C99J189966M
Prepared By:
Unit Tag: AC-4
Quantity: 1

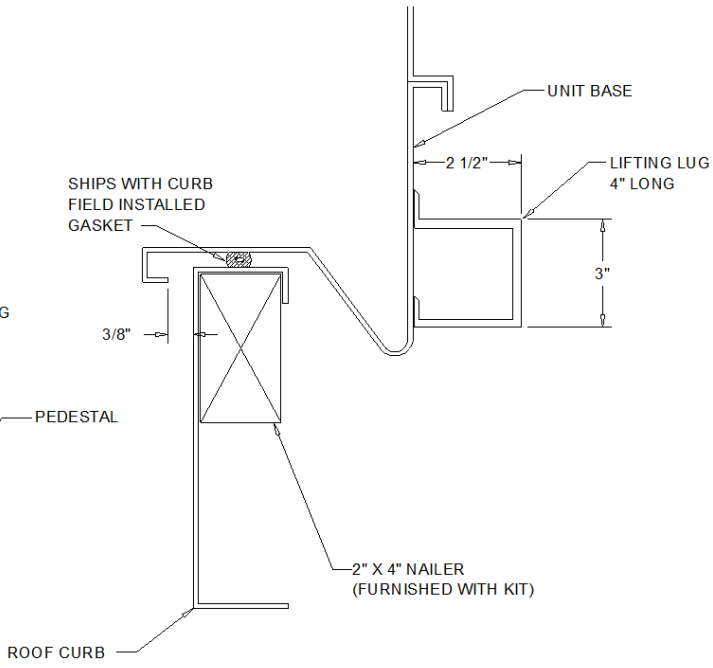

32 1/4"
9 3/16"
8 1/8"
CONDENSER
FLUE OPENING
1 1/4" GAS PIPE ENTRY W / GROMMET
CPVC FURNACE DRAIN
231 15/16" TO END OF UNIT
231 1/8" TO END OF UNIT
234 1/16" TO END OF UNIT
AIR HANDLER
40 850MBH TON GAS HEAT
LEFT SIDE OF UNIT



TYPICAL PEDESTAL AND BASE
DIMENSION DRAWING



TYPICAL PEDESTAL AND BASE PAN DETAIL
DETAIL



TYPICAL ROOF CURB AND BASE PAN DETAIL
DETAIL

ELECTRICAL / GENERAL DATA

TONS

Model (Tonnage):	SFHLF40 (40Ton)
Unit Operating Voltage Range:	414-506
Unit Primary Voltage:	460
Unit Hertz:	60
Unit Phase:	3
EER:	10.7 EER
IEER:	15.6 EER

GAS HEATING - PERFORMANCE

Heating Input:	210-850
Heating Output:	168-680
Capacity Steps:	4:1

HEATING - GENERAL DATA

Gas inlet pressure: (in w.c.)	1 1/4"
Gas Pipe Connection Size:	7" wc - 14" wc

COMPRESSOR

Compressor 1 Count:	1.00 Each
Compressor 1 RLA:	13.10 A
Compressor 2 Count:	1.00 Each
Compressor 2 RLA:	15.90 A
Compressor 3 Count:	1.00 Each
Compressor 3 RLA:	26.00 A

ELECTRIC HEATER

Electric Heater Kw:	
Electric Heater Full Load Amps:	

SUPPLY FAN MOTOR

Number of Fans:	2.00 Each
Number of Motors:	1
Total Horsepower:	Supply Fan Hp: 20 hp FC
Supply Fan Motor Full Load Amps:	24.70 A
Supply Fan Efficiency:	48.60 %

EXHAUST / RETURN FAN MOTOR SECTION

Number:	Value not available
Horsepower (Each):	100% -Exhaust 7.5 Hp w/Statitrac
Exhaust/Return Fan Motor FLA:	9.80 A

CONDENSER FAN MOTOR

Number:	4
Horsepower (each):	1.0
Condenser Fan Motor Full Load Amps (Total):	7.2

FILTERS - TYPE

Type:	
Furnished:	YES
Number:	16
Recommended Size:	20" x 25"x 2"

PREFILTERS

Furnished:	
Number:	
Recommended Size:	

EVAPORATIVE CONDENSER (7)

Pump Horsepower:	N/A
Pump Full Load Amps:	N/A
Sump Heater Full Load Amps:	N/A
Sump Heater kW:	N/A

REFRIGERANT TYPE (6)

Charge Type:	R-410A
Factory Charge (Circuit #1):	26.8 lb
Factory Charge (Circuit #2):	29.8 lb

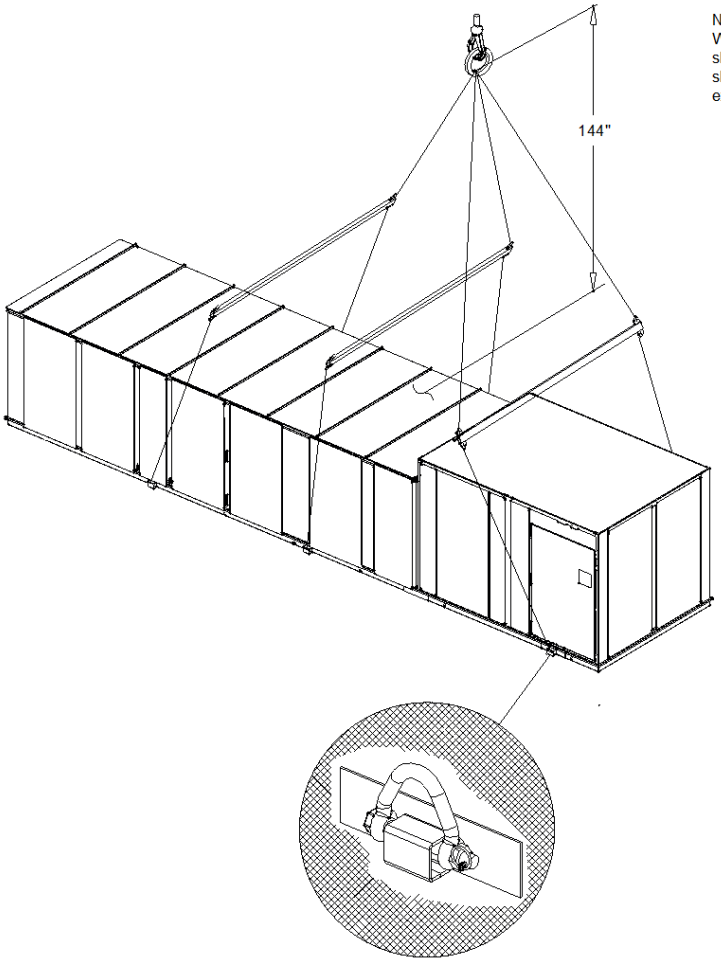
FINAL FILTERS - TYPE

Type:	
Furnished:	
Number:	
Recommended Size:	

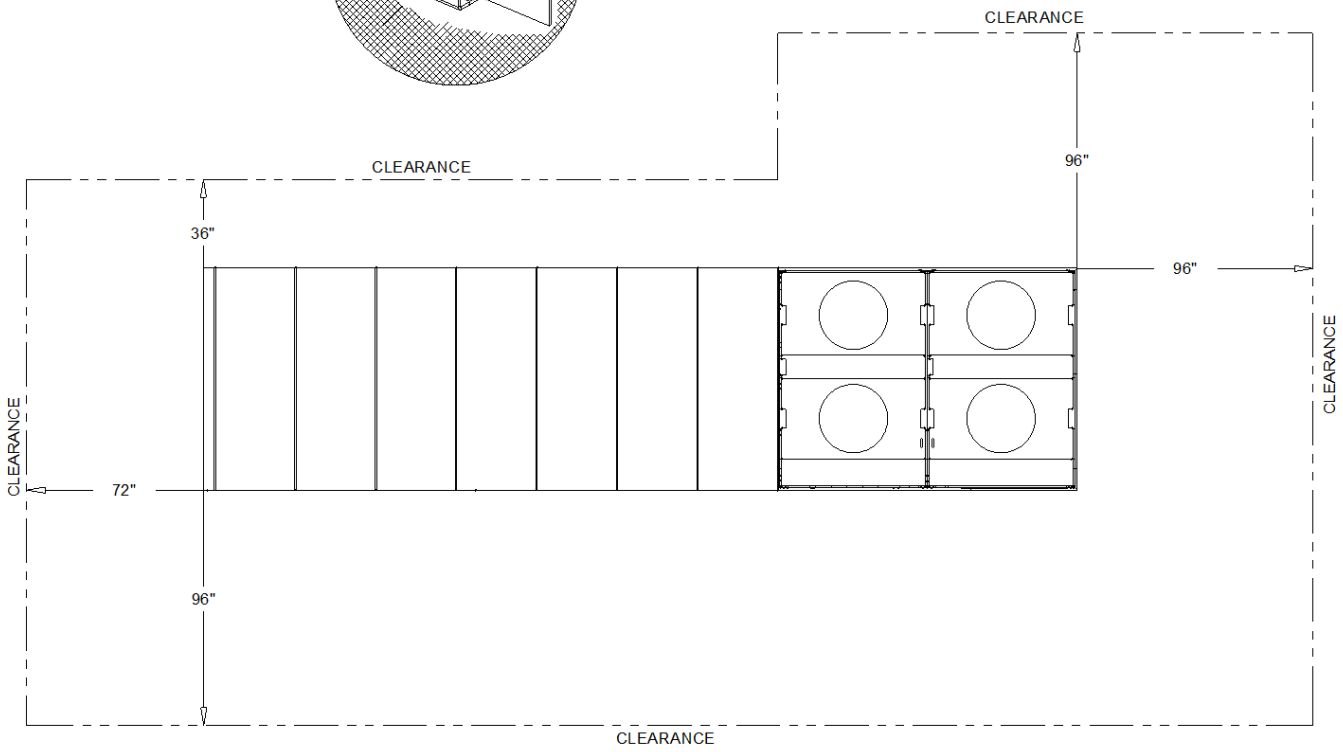
PREFILTERS

Furnished:	
Number:	
Recommended Size:	

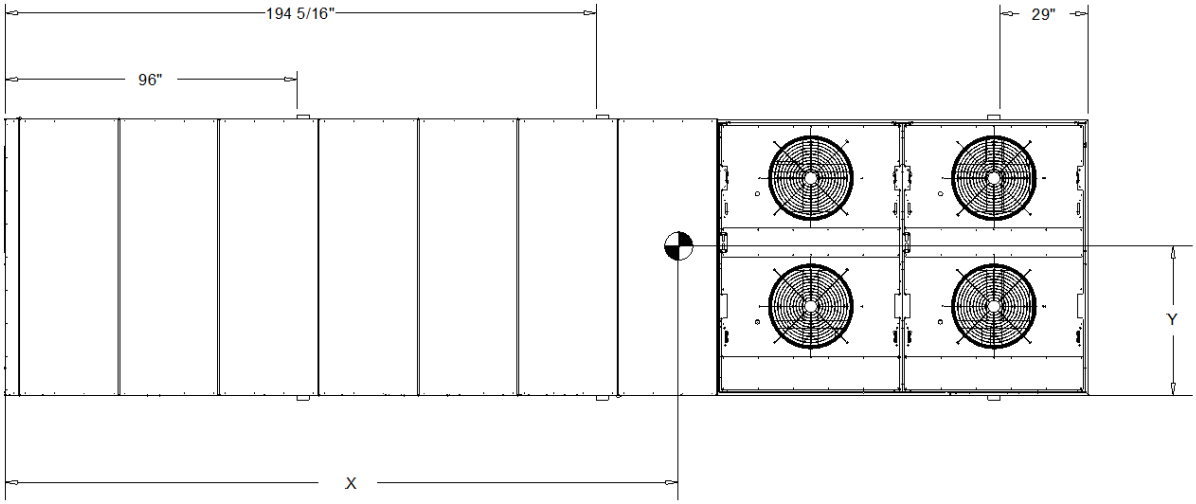
Notes:
1. LOAD 1=Current of the largest motor (compressor or fan motor); LOAD 2=Sum of the currents of all remaining motors; LOAD 3 =Current of electric heaters LOAD 4 =Control Power Transformer (20-40 and 24-48 ton units add 3 FL amps for wire sizing formula, 50-75 and 59 - 89 ton units add 6 FL amps)
2. For Electric Heat MCA, MOP, RDE values, calculate for both cooling and heating modes. (When determining LOADS, the compressors do not operate when the unit is in heating mode) (On 70-89 ton single source units, heating Load 4 = 12 amps on 200,230 volt units and 9 amps on 460,575 volt units)
3. If selected Max Over Cur is less than the Min Clr Amp, then select the lowest maximum fuse size which is equal to or larger than the Min Cir Amp, provided the selected fuse size does not exceed 800 amps.
4. If the selected Recommended Dual Element fuse size is greater than the selected Max Over Cur Protection value, then select the Recommended Dual Element fuse size value to equal the Max Over Protection value.
5. Compressor KW at AHRI rating conditions of 80/67 -95
6. Refrigerant charge is an approx. value. For a more precise value, see unit nameplate and service instructions.
7. Sump Heater is an optional feature.
8. Total Horsepower is the combined Horsepower for the Supply Fan Motors.

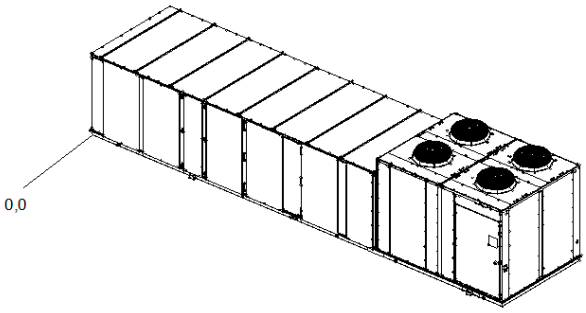


Note:
When 2 or more units are to be placed side by side, the distance between the units should be increased to 150% of the recommended single unit clearance. The units should also be staggered to reduce span deflection & assure proper diffusion of exhaust air.



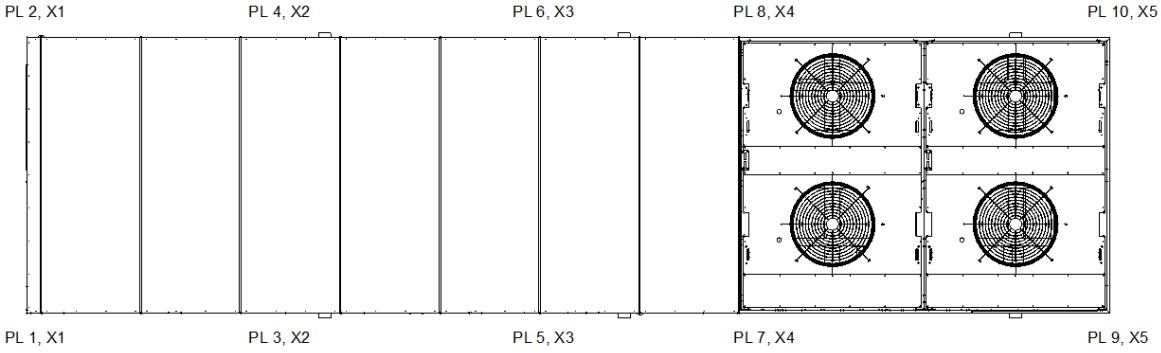
RIGGING AND CLEARANCE
AIR COOLED DRAWING





Center of Gravity X:	17.01 ft	Point load X location 1:	4.000 in
Center of Gravity Y:	3.92 ft	Point load X location 2:	101.000 in
		Point load X location 3:	187.000 in
Point Load 1:	704.1 lb	Point load X location 4:	274.000 in
Point Load 2:	774.1 lb	Point load X location 5:	370.000 in
Point Load 3:	795.5 lb	Point load X location 6:	N/A
Point Load 4:	865.5 lb	Point load X location 7:	N/A
Point Load 5:	876.6 lb	Point load X location 8:	N/A
Point Load 6:	946.5 lb	Point load X location 9:	N/A
Point Load 7:	958.5 lb	Point load X location 10:	N/A
Point Load 8:	1,028.5 lb	Point load Y location 1:	4.000 in
Point Load 9:	1,049.0 lb	Point load Y location 2:	87.000 in
Point Load 10:	1,118.9 lb		
Total Weight:	9,117.1 lb		

Notes:
1. The actual weight is stamped on the unit nameplate.
2. The weight shown represents the typical unit operating weight for the configuration selected. Estimated at +/- 10% of the nameplate weight. .
3. Design Special weights are not displayed. Any weight added through COD (Custom Order Design) will not be accounted in the +/- 10% estimate
4. When 2 or more units are to be placed side by side, the distance between the units should be increased to 150% of the recommended single unit clearance. The units should also be staggered to reduce span deflection & assure proper diffusion of exhaust air.



CENTER OF GRAVITY AND INSTALL WEIGHT X-Y POINTS

AIR COOLED DRAWING

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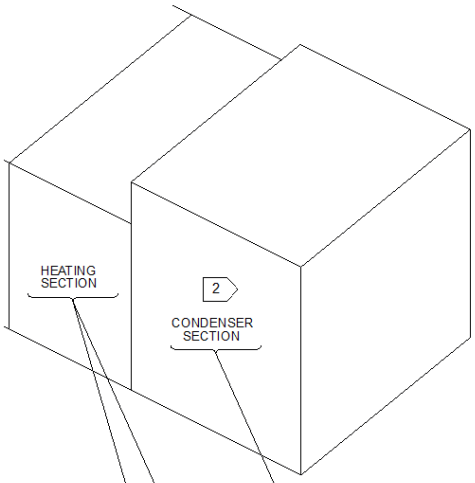

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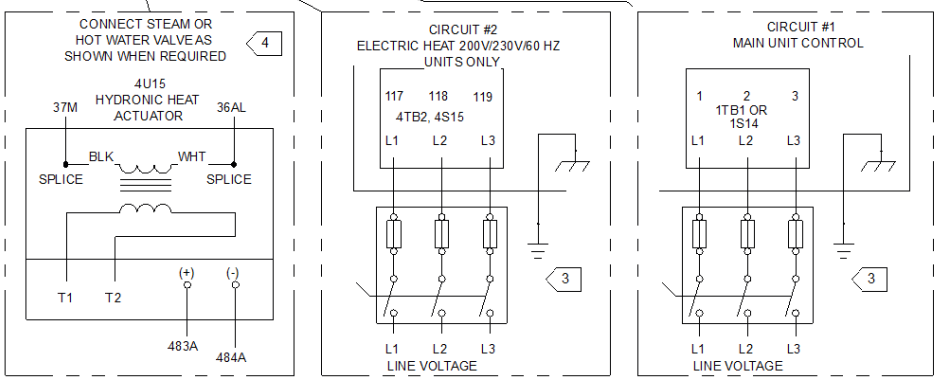

NOTES:

1. ALL WIRING AND COMPONENTS SHOWN DASHED TO BE SUPPLIED AND INSTALLED BY THE CUSTOMER IN ACCORDANCE WITH LOCAL ELECTRICAL CODES.
2. CUSTOMER CONNECTIONS - MAIN UNIT CONTROL (CIRCUIT #1) - ARE LOCATED IN THE CONDENSER SECTION FOR 20 THRU 75 TON UNITS.
3. SEE CUSTOMER CONNECTION WIRE RANGE TABLE FOR ACCEPTABLE WIRE SIZES FOR CONNECTION TO MAIN UNIT TERMINAL BLOCK (1TB1/4TB2) OR DISCONNECT SWITCH (1S14/4S15).
4. WIRES TO THE OPTIONAL STEAM AND/OR HOT WATER HEAT VALVE ARE SUPPLIED WITH THE UNIT. WIRE CONNECTIONS TO THE VALVE TO BE MADE BY THE CUSTOMER.
6. OPTIONAL 5U57 REMOTE ZONE TEMP SENSOR IS USED FOR UNOCCUPIED HEAT/COOL TEMP CONTROL SENSING.
7. WHEN 5U69 REMOTE ZONE TEMP SENSOR IS USED, REMOVE 5U58 INTERGRAL ZONE TEMP SENSOR ATTACHED TO TERMINALS S1 AND S2.
8. WIRES USE SHIELDED TWISTED PAIR WIRE.
9. USE SHIELDED TWISTED PAIR WIRE. WRAP SHIELDS WITH TAPE TO PREVENT CONTACT WITH GROUND.
10. REMOVE JUMPER (1TB4-15 & 1TB4-16) AND INSTALL HIGH DUCT TEMP T-STAT /OR FIELD SUPPLIED DEVICE.
11. REMOVE JUMPER (1TB4-17 & 1TB4-18) WHEN FIELD SUPPLIED EXTERNAL AUTO/STOP SWITCH (5S67) IS INSTALLED.
12. CHANGEOVER (5K87) AVAILABLE ONLY ON HYDRONIC HEAT UNITS OR MODULATING GAS HEAT UNITS.
13. ALARM OUTPUT SWITCHES ON ANY MANUAL RESET DIAGNOSTIC.
14. OPTIONAL HEAT MODULE AUX. TEMP (5RT16) IS USED FOR MORNING WARM-UP CONTROL ON UNITS WITH HEATING OPTION.
15. TERMINAL BLOCK 1TB17 AND ASSOCIATED WIRING REQUIRED WITH GBAS (1U51) OPTION. DEMAND LIMIT RELAY (5K89) TO BE PROVIDED BY CUSTOMER.
16. VENTILATION OVERRIDE MODE CONTACTS RATED 12MA @ 24VDC MINIMUM (5K90 - 5K91 - 5K92 - 5K93 - 5K94) TO BE PROVIDED BY CUSTOMER.
17. WIRE NODES 533 & 534 REQUIRED WITH BAS/NETWORK COMM MODULE (1U54) OPTION. USE SHIELDED TWISTED PAIR WIRE.
18. FIELD CONNECTIONS TO DRIVE VAV BOXES FULL OPEN DURING NIGHT SETBACK MODE.
19. 15A FUSE REPLACEMENT IS REQUIRED FOR 50 THRU 60 TON - 0.50 KVA TRANSFORMER WITH 200V - 230V - 460V OR 575V UNIT VOLTAGE.
    20A FUSE REPLACEMENT IS REQUIRED FOR 50 THRU 60 TON - 0.50 KVA TRANSFORMER WITH 380V OR 415V UNIT VOLTAGE.
21. CONTACTS RATED 12 MA @ 24VDC MINIMUM.
22. CONNECT TO 24VAC CLASS 2 CIRCUITS ONLY.
23. REMOVE JUMPER WHEN OPTIONAL FIELD SUPPLIED OUTSIDE AIR SENSOR (3RT3) IS INSTALLED AND THE UNIT DOES NOT HAVE ECONOMIZER.
24. FIELD SUPPLIED AND INSTALLED OCCUPIED/UNOCCUPIED CONTACTS (5K86) FOR USE ON UNITS WITHOUT REMOTE PANEL WITH NIGHT SETBACK (5U58).
25. GBAS 0-5V OPTION CONNECTIONS.
26. GBAS 0-10V OPTION CONNECTIONS.
27. FOR GBAS INPUTS AI1-AI4, "GBAS 0-5V" REQUIRES 0-5V VDC AND "GBAS 0-10V" REQUIRES 0-10VDC.
28. "ACTIVE DIAGNOSTICS (BO5)" APPEARS WITH BOTH "GBAS 0-5V" AND "GBAS 0-10V".
29. SEE FUSE REPLACEMENT TABLE ON VFD PANEL FOR VFD POWER FUSES (F40, F41, F42).
30. SWITCH A53, LOCATED ON THE VFD, MUST BE SET TO "U" (OFF).

FUSE REPLACEMENT TABLE							
CONDENSER FAN FUSE 1F1 THRU 1F6 CLASS RK5	UNIT VOLTAGE	200	230	380	415	460	575
	TIME DELAY	25A	25A	15A	15A	15A	15A
CONTROL POWER FUSE							
CONTROL (1T1) TRANSFORMER RATING		0.25 KVA	0.30 KVA	0.50 KVA	0.75 KVA	1.00 KVA	1.50 KVA
1F7 CLASS CC - TYPE FNQ-R	20-30 TON	6.25A	6.25A	--	10A	--	--
	40 TON	15A	20A	--	20A	--	--
	50-60 TON	--	--	15A	--	20A	--
	70-75 TON	--	--	--	--	15A	20A

ELECTRIC HEAT FUSE	4F19 THRU 4F36, 4F46, 47, 48	CLASS K5	60A
COMPRESSOR PROTECTION FUSE	1F44 & 1F45	TYPE MTH	6A
TRANSFORMER CIRCUIT FUSE	1F72 THRU 1F74	TYPE FNQ-R	15A

VFD PROTECTION FUSES (CLASS "T" FUSES) OPTIONAL SUPPLY VFD 1F57 - 1F62, OPTIONAL EXHAUST / RETURN VFD 1F63-1F65

	UNIT VOLTAGE	FUSE RATING	3 HP	5 HP	7.5 HP	10 HP	15 HP	20 HP	25 HP	30 HP	40 HP	50 HP
BELT DRIVE MOTOR 20-130 UNITS	200V/60/3	600V	40A	60A	80A	100A	150A	200A	225A	300A	350A	N/A
	230V/60/3	600V	30A	45A	70A	90A	125A	175A	200A	250A	300A	N/A
	380V/50/3	600V	15A	30A	45A	50A	90A	100A	125A	150A	200A	N/A
	415V/50/3	600V	15A	30A	45A	50A	90A	100A	125A	150A	200A	N/A
	460V/60/3	600V	15A	25A	35A	45A	60A	90A	100A	125A	150A	200A
	575V/60/3	600V	15A	15A	25A	35A	50A	70A	60A	100A	125A	175A

	UNIT VOLTAGE	FUSE RATING	3 HP	5 HP	7.5 HP	10 HP	15 HP 1K-1.6K RPM	15 HP 1.7K-2.4K RPM	20 HP	25 HP	30 HP
OPTIONAL DIRECT DRIVE MOTOR 20-59 UNITS	200V/60/3	600V	40A	60A	80A	100A	150A	150A	200A	225A	300A
	230V/60/3	600V	25A	45A	70A	90A	125A	125A	175A	200A	250A
	460V/60/3	600V	15A	25A	35A	45A	70A	60A	90A	100A	125A
	575V/60/3	600V	15A	15A	25A	35A	50A	50A	70A	80A	100A

	UNIT VOLTAGE	FUSE RATING	10HP	15 HP 1K-1.6K RPM	15 HP 1.7K-2.4K RPM	20HP	30 HP 1K-1.6K RPM	30 HP 1.7-2.4K RPM	40HP	50HP
OPTIONAL DIRECTMDIVE MOTOR 60-89 TON	200V/60/3	600V	125A	175A	150A	200A	300A	150A	350A	N/A
	230V/60/3	600V	95A	150A	125A	175A	250A	250A	300A	N/A
	460V/60/3	600V	45A	70A	60A	90A	125A	125A	150A	200A
	575V/60/3	600V	40A	60A	50A	70A	125A	100A	125A	175A

CUSTOMER CONNECTION WIRE RANGE

NOTES:

A. BLOCK SIZE & DISCONNECT SIZE ARE CALCULATED BY SELECTING THE SIZE GREATER THAN OR EQUAL TO 1.15 X (SUM OF UNIT LOADS). SEE UNIT LITERATURE FOR UNIT LOAD VALUES.

UNITS WITH MAIN POWER TERMINAL BLOCK (ALL VOLTAGES)			UNITS WITH MAIN POWER DISCONNECT SWITCH (ALL VOLTAGES)		
BLOCK SIZE	WIRE QTY	CONNECTOR WIRE RANGE	DISCONNECT SIZE	WIRE QTY	CONNECTOR WIRE RANGE
335 AMP	(1)	#6 - 350 MCM	100 AMP	(1)	#14 - 1/0
760 AMP	(2)	#4 - 500 MCM	250 AMP	(1)	#4 - 350 kcmil
840 AMP	(2)	#2 - 600 MCM	400 AMP	(1) OR	#1 - 600 kcmil OR
				(2)	#1 - 250 kcmil
			600 AMP	(2)	250 - 500 MCM
			1000 AMP	(3)	3/0 - 500 kcmil

OPTIONAL CONVENIENCE OUTLET FUSE 1F55 AND 1F56 (TIME DELAY TYPE FNQ-R FUSE)	200V/60/3	230V/60/3	380V/50/3	415V/50/3	460V/60/3	575V/60/3
	12A	10A	N/A	N/A	5A	4A

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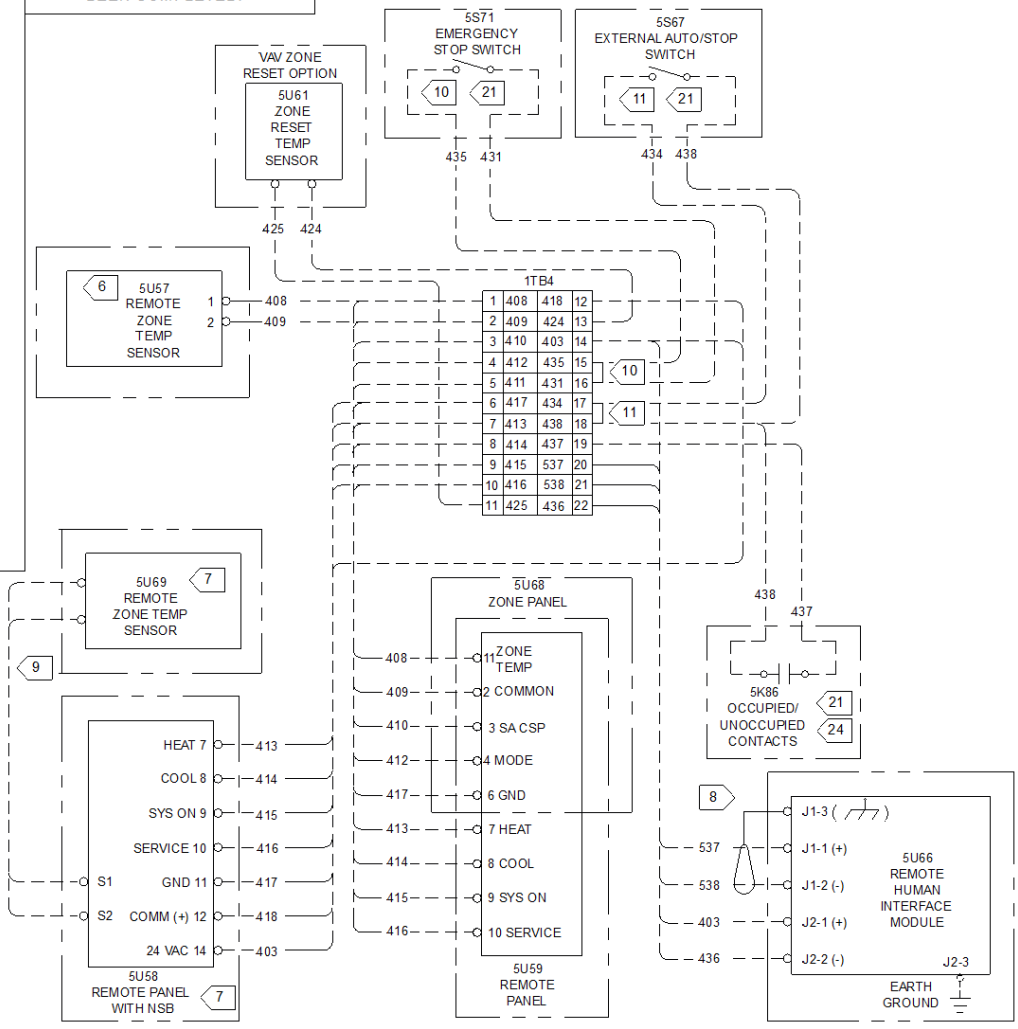

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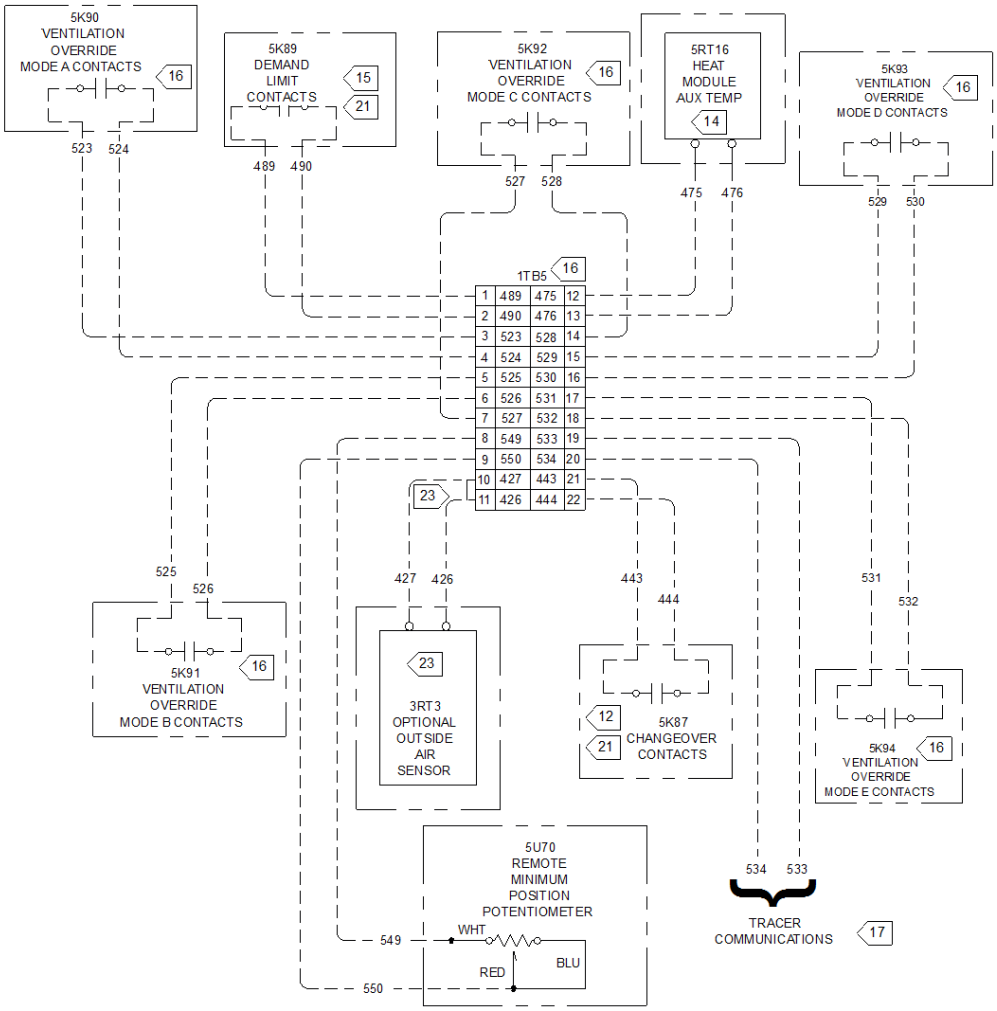

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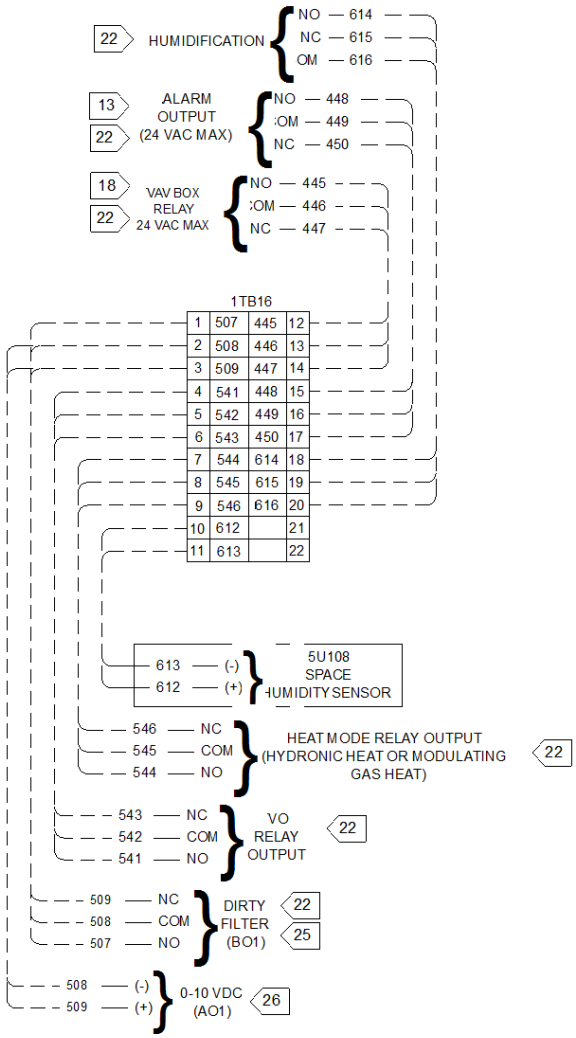

DANFOSS VARIABLE FREQUENCY DRIVE PROGRAMMING PARAMETERS			
MENU	PARAMETER	DESCRIPTION	SETTING
LOAD/MOTOR	1-21	MOTOR POWER	SET ONLY FOR APPLICATIONS USING 3HP HIGH EFFICIENCY MOTORS
	1-22	MOTOR VOLTAGE	SET ONLY FOR 200/230V 60HZ 380/415V 50HZ APPLICATIONS
	1-24	MOTOR CURRENT	SET BASED ON MOTOR NAMEPLATE
	1-25	MOTOR NOMINAL SPEED	1800 RPM
	1-73	FLYING START	ENABLED
BRAKES	2-01	DC BRAKE CURRENT	0%
REFERENCE/ RAMPS	3-15	REFERENCE 1 SOURCE	ANALOG INPUT 53 30
	3-41	RAMP 1 RAMP UP TIME	30 SECONDS
	3-42	RAMP 1 RAMP DOWN TIME	30 SECONDS
LIMITS/ WARNINGS	4-12	MOTOR SPEED LOW LIMIT	22HZ
	4-18	CURRENT LIMIT	100% RATED CURRENT
DIGITAL IN/OUT	5-40[0]	FUNCTION RELAY 1	NO ALARM
	5-40[1]	FUNCTION RELAY 2	RUNNING
SPECIAL FUNCTIONS	14-01	SWITCHING FREQUENCY	4.5KHZ
	14-12	FUNCTION AT MAINS IMBALANCE	DERATE
	14-20	RESET MODE	AUTOMATIC RESET X 3
	14-60	FUNCTION AT OVER TEMPERATURE	DERATE

General - R410A
Units shall be specifically designed for outdoor rooftop installation on a roof curb and be completely factory assembled and tested, piped, internally wired, fully charged with R-410A compressor oil and shipped in one piece. Units shall be available for direct expansion cooling only, or direct expansion cooling with natural gas, electric, hot water or steam heating. Filters, outside air system, exhaust air system, optional non-fused disconnect switches and all operating and safety controls shall be furnished factory installed. All units shall be cULus approved and factory run tested. Cooling capacity shall be rated in accordance with AHRI Standard 360. All units shall have decals and tags to aid in service and indicate caution areas. Electrical diagrams shall be printed on long life water resistant material and shall ship attached to control panel doors.

Casing
Exterior panels shall be zinc coated galvanized steel, phosphatized and painted with a slate grey air-dry finish durable enough to withstand a minimum of 672 hours consecutive salt spray application in accordance with standard ASTM B117. Screws shall be coated with zinc-plus-zinc chromate. Heavy gauge steel hinged access panels with tiebacks to secure door in open position shall provide access to filters and heating sections. Refrigeration components, supply air fan and compressor shall be accessible through removable panels as standard. Unit control panel, filter section, and gas heating section shall be accessible through hinged access panels as standard. Optional Double Wall Construction hinged access doors shall provide access to filters, return/exhaust air, heating and supply fan section. All access doors and panels shall have neoprene gaskets. Interior surfaces or exterior casing members shall have 1/2" fiberglass insulation. Unit base shall be watertight with heavy gauge formed load bearing members, formed recess and curb overhang. Unit lifting lugs shall accept chains or cables for rigging. Lifting lugs shall also serve as unit tiedown points.

IntelliPak Replacement Unit (IRU)
The IntelliPak replacement solution shall include a condenser base pan, strengthening of the condenser section with welded reinforcement of condenser base rail, as well as welded integral supports to the condenser base. This additional strength shall allow the reuse of the existing pedestal as well as any Trane full perimeter curb and reduce installation risk and labor. Also optional with stainless steel.

Hinged Access Doors
Hinged access doors shall provide easy access to supply fan, filters, exhaust/return fan, and heating section.These access doors shall feature double wall construction with dual density insulation sandwiched between heavy gauge galvanized steel panels for strength and durability

Air-Cooled Condenser Coil - R410A
Condenser coils shall have all Aluminum Microchannel coils. All coils shall be leak tested at the factory to ensure pressure integrity. The condenser coil is pressure tested to 650psig Subcooling circuit(s) shall be provided as standard.
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Condenser Fans and Motors
All condenser fans shall be vertical discharge, direct drive fans, statically balanced, with aluminum blades and zinc plated steel hubs. Condenser fan motors shall be three-phase motors with permanently lubricated ball bearings, built-in current and thermal overload protection and weathertight slingers over motor bearings.

Evaporator Coil - R410A
Internally enhanced copper tubing of 3/8" or 1/2" O.D. shall be mechanically bonded to heavyduty aluminum fins of configured design. All coils shall be equipped with thermal expansion valves and factory pressure and leak tested.

Compressors - R410A
The Trane Scroll compressor shall be industrial grade, direct drive 3600 RPM maximum speed scroll type. The motor shall be suction gas-cooled hermetic design. Compressor shall have centrifugal oil pump with dirt separator, oil sight glass, and oil charging valve. Compressor shall also be provided with thermostatic motor winding temperature control to protect against excessive motor temperatures resulting from over-/under-voltage or loss of charge, high and low pressure cutouts, and reset relay.

Variable Speed Compressors
TheTrane eFlex variable speed compressor shall be capable of speed modulation from 1500 rpm to a maximum of 6000 rpm.This allows variable speed units to modulate capacities to 15% of full load or below.The compressor motor shall be a permanent magnet type for all but 575V units. Each compressor shall have a crankcase heater installed and properly sized to minimize the amount of liquid refrigerant present in the oil sump during off cycles. Each variable speed compressor is matched with a specially designed variable frequency drive which modulates the speed of the compressor motor and provides several compressor protection functions.

Phase Monitor
Shall protect 3-phase equipment from phase loss, phase reversal, and low voltage. Any fault condition shall produce a Failure Indicator LED, and send the unit into an emergency stop condition. cULus approved. (Standard on 20-75T units)

Gas-fired heating option, 4:1 Modulating Gas Heat
All gas-fired units shall be completely assembled and have a wired gas fired heating system integral within unit. Units shall be cULus approved specifically for outdoor applications downstream from refrigerant cooling coils. All gas piping shall be threaded connection with a pipe cap provided. Gas supply connection shall be provided through the side or bottom of unit. All units shall be fire tested prior to shipment. Heat Exchanger shall be tubular two pass design with stainless steel primary and secondary surfaces made from grades of stainless steel suitable for condensing situations. Free floating design shall eliminate expansion and contraction stresses and noises. Gasketed cleanout plate shall be provided for cleaning of tubes/turbulators. Heat exchanger shall be factory pressure and leak tested. Burner shall be a stainless steel industrial type with an air proving switch to prevent burner operation if the burner is open for maintenance or inspection. Ceramic cone shall be provided to shape the flame to prevent impingement on sides of heat exchanger drum. Burner assembly shall house ignition and monitoring electrode. Combustion Blower shall be centrifugal type fan to provide air required for combustion. Fan motor shall have built-in thermal overload protection. Gas Safety Controls shall include electronic flame safety controls to require proving of combustion air prior to ignition sequence which shall include a 60 second pre-purge cycle. Pilot ignition shall be provided on 500 and 850 MBh heat exchanger units. Continuous electronic flame supervision shall be provided as standard. The heater shall have a turn down ratio of 4 to 1.

Supply Fan
Supply fan motors shall be either open drip-proof or enclosed fan cooled. All supply fans shall be dynamically balanced in factory. Supply fan shall be test run in unit and shall reach rated rpm. All 60 Hz supply fan motors meet the Energy Independence Security Act of 2007 (EISA). All 50 Hz supply fan motors meet the U.S. Energy Policy Act of 1992 (EPACT).

Forward Curved Supply Fan
Supply fans shall have two double-inlet, forward-curved fans mounted on a common shaft with fixed sheave drive. Fans shall be factory-tested to reach rated rpm before the fan shaft passes through first critical speed. Fan shaft shall be mounted on two grease lubricated ball bearings designed for 200,000 hours average life. Optional extended grease lines shall allow greasing of bearings from unit filter section. Fan motor and fan assembly shall be mounted on common base to allow consistent belt tension with no relative motion between fan and motor shafts. Entire assembly shall be completely isolated from unit and fan board by double deflection rubber-in-shear isolators, or by optional 2" deflection spring isolation.

Variable Frequency Drive
Unit shall include factory-installed and tested variable frequency drive[s] (VFD) to provide motor speed modulation. The VFD shall receive a 0-10VDC speed signal from the unit controller. The drive will respond to the signal by accelerating or decelerating to maintain the controlling set point (duct static, space pressure, etc). VFD shall also include the following features:

1. Designed, constructed, and tested in accordance with NEMA ICS, NFPA, and IEC standards and housed in a plastic IP20 enclosure.
2. DC link reactors on both the positive and negative rails of the DC bus equal to 3% impedance to minimize power line harmonics.
3. Full rated output current continuously - 110% of rated current for 60 seconds and 160% of rated current for up to 0.5 second while starting.
4. Isolation between the Drive's power circuitry and control circuitry to ensure operator safety and to protect connected electronic control equipment
   from damage caused by voltage spikes, current surges, and ground loop currents.

5. Audible noise reduction through automatic adjustment of the carrier frequency and frequency avoidance.

6. Rated at 40C with a standard operating range of -10 to 50C (14 to 124F) ambient temperatures and 0 to 95% relative humidity

7. Self-diagnostics and motor protections such as: cULus listed overload, phase loss, and internal thermal overload.
8. Off/Stop and Auto/Start selector switches to start and stop the AC Drive and determine the speed reference.
a. On units with bypass, an AC Drive/Off/Bypass hand selector switch shall be provided in the unit control box

b. In DRIVE mode speed reference shall be provided by a 0-10 VDC analog input

9. A keypad interface which shall be programmable by language and feature multiple lines for easy reading.

10. Controlled and/or accessible points such as AC Drive Start/Stop, speed reference, and fault diagnostics.

11. Meter points such as motor power in HP, motor power in kW, motor kW-hr, motor current, motor voltage, hours run, DC link voltage, thermal load
   on motor, Thermal load on AC Drive and Heatsink temperature.

12. Troubleshooting features such as:

a. AC Drive memory storage of the last 10 faults and related operational data

b. Four simultaneous displays: frequency or speed, run time, output amps and output power

c. Keypad which shall display: Reference Signal Value, Output Frequency in Hz or percent, Output Amps, Motor HP, Motor kW, kW
13. Coated circuit boards for protection against corrosive environments

14. Field readable BACnet points to allow for communication of stauts, setpoints and diagnostics to the BAS.

Bypass control
Shall provide full nominal airflow in the event of drive failure.

Two-inch Spring Isolators
Supply and Exhaust/Return fan (if applicable) assemblies shall be isolated with two-inch nominal deflection to reduce transmission of vibrations

Modulating 100 Percent Exhaust Fan with Statitrac Control
Two, double-inlet, forward-curved fans shall be mounted on a common shaft with fixed sheave drive. All fans shall be dynamically balanced and tested in factory before being installed in unit. Exhaust fan shall be test run as part of unit final run test. Unit shall reach rated rpm before fan shaft passes through first critical speed. Fan shaft shall be mounted on two grease lubricated ball bearings designed for 200,000-hour average life. Optional extended grease lines shall be provided to allow greasing of bearings from unit filter section. Fan motor and assembly shall be mounted on common base to allow consistent belt tension with no relative motion between fan and motor shafts. Entire assembly shall be completely isolated from unit and fan board by double deflection, rubber in shear isolators or spring isolation on motor sizes larger than five hp. For both CV and VAV rooftops, the 100 percent modulating exhaust discharge dampers (or VFD) shall be modulated in response to building pressure. A differential pressure control system, (Statitrac), shall use a differential pressure transducer to compare indoor building pressure to outdoor ambient atmospheric pressure. The FC exhaust fan shall be turned on when required to lower building static pressure setpoint. The (Statitrac) control system shall then modulate the discharge dampers (or VFD) to control the building pressure to within the adjustable, specified dead band that shall be adjustable at the Human Interface Panel. All 60 Hz exhaust fan motors meet the Energy Independence Security Act of 2007 (EISA).

0-100 percent modulating economizer
Operated through the primary temperature controls to automatically utilize OA for "free" cooling. Automatically modulated return and OA dampers shall maintain proper temperature in the conditioned space. Economizer shall be equipped with an automatic lockout when the outdoor high ambient temperature is too high for proper cooling. Minimum position control shall be standard and adjustable at the Human Interface Panel or with a remote potentiometer or through the building management system. A spring return motor shall ensure closure of OA dampers during unit shutdown or power interruption. Mechanical cooling shall be available to aid the economizer mode at any ambient. Low leak economizer dampers shall be standard with a leakage rate of 2.5 percent of nominal airflow (400 CFM/ton) at 1" wg. static pressure.

Economizer Control with Reference Enthalpy
An outdoor enthalpy sensor shall be provided to compare the total heat content of outdoor air to a locally adjustable setpoint. The setpoint shall be programmed at the human interface , or remote human interface, to determine if the outdoor enthalpy condition is suitable for economizer operation.

Ultra-Low Leak Damper
Economizer return and fresh air dampers shall be provided with horizontal airfoil blades and spring-return actuators. The economizer shall have a functional life of 60,000 opening and closing cycles. Dampers shall be AMCA 511 Class 1A certified with a maximum leakage rate of 3 CFM/sqft at 1.0 inWC pressure differential thus exceeding requirements of ASHRAE 90.1-2013, California Title 24-2013, and IECC-2012. Fault Detection and Diagnostic (FDD) control will also be provided with Ultra Low Leak Economizers. FDD control monitors the commanded position of the economizer compared to the feedback position of the damper. If the damper position is outside +/- 10% of the commanded position, a diagnostic is generated.

Ultra-Low Leak motorized exhaust dampers will be provided when the Ultra-Low Leak Economizer is ordered with an exhaust/return option that includes motorized dampers. Ultra Low Leak motorized exhaust dampers will be AMCA 511 Class 1A certified with a maximum leakage rate of 3 CFM/sq-ft at 1.0 inWC pressure differential. This exceeds the most stringent requirements of ASHRAE 90.1 and IECC (4 CFM/sq-ft at 1.0 inWC pressure differential).

Throwaway Filter, MERV 4
Filters are 2" thick, UL Class 2, glass fiber type. Filters rated at 80% average synthetic dust weight arrestance when tested in accordance with ASHRAE 52-76 and 52.1 test methods. Filters mounted in galvanized steel rack.

Design Special - 4" Vertical Filter Rack with Filters
Option shall include a factory installed standard size 4" filter rack with filters

Unit Controller
DDC microprocessor controls shall be provided to control all unit functions. The control system shall be suitable to control CV or VAV applications. The controls shall be factory-installed and mounted in the main control panel. All factory-installed controls shall be fully commissioned (run tested) at the factory. The unit shall have a Human Interface Panel with a 16 key keypad, a 2 line X 40 character clear English display as standard to provide the operator with full adjustment and display of control data functions. The unit controls shall be used as a stand-alone controller, or as part of a building management system involving multiple units.

1
The unit shall be equipped with a complete microprocessor control system. This system shall consist of temperature and pressure (thermistor and transducer) sensors, printed circuit boards (modules), and a unit mounted HumanInterface Panel. Modules (boards) shall be individually replaceable for ease of service. All microprocessors, boards and sensors shall be factory mounted, wired and tested. The microprocessor boards shall be stand-alone DDC controls not dependent on communications with an on-site PC or a Building Management Network. The microprocessors shall be equipped with on-board diagnostics, indicating that all hardware, software and interconnecting wiring are
in proper operating condition. The modules (boards) shall be protected to prevent RFI and voltage transients from affecting the board's circuits. All field wiring shall be terminated at separate, clearly marked terminal strip. Direct field wiring to the I/O boards is not acceptable. The microprocessor's memory shall be non-volatile EEPROM type requiring no battery or capacitive backup, while maintaining all data.

2
Zone sensors shall be available in several combinations with selectable features depending on sensor.

3
The Human Interface Panel's keypad display character format shall be 40 characters x 2 lines. The character font shall be 5 x 7 dot matrix plus cursor. The display shall be Supertwist Liquid Crystal Display (LCD) with blue characters on a ray/green background which provides high visibility and ease of interface. The display format shall be in clear English. Two or three digit coded displays are not acceptable.

4
The keypad shall be equipped with 16 individual touch-sensitive membrane key switches. The switches shall be divided into four separate sections and be password protected from change by unauthorized personnel. The six main menus shall be STATUS, SETPOINTS, DIAGNOSTICS, SETUP, CONFIGURATION and SERVICE MODE.

BACnet Communication Interface Module
Option shall provide control and monitoring of the rooftop by Tracer SC or a 3rd party building management system utilizing BACnet protocol.

Unit Interrupt Rating (Standard Short Circuit Current Rating-SCCR)
A 5,000 Amp rating shall be applied to the unit enclosure using a non-fused circuit breaker for disconnect switch purposes. Fan motors, compressors, and electric heat circuits shall be provided with protective devices that will provide the unit rated level of fault protection. The unit shall be marked with approved cULus markings and will adhere to cULus regulations.

Factory Powered GFI Convenience Outlet
A15A, 115V Ground Fault Interrupter convenience outlet shall be factory installed. It shall be wired and powered from a factory mounted transformer. Unit-mounted, non-fused disconnect with external handle shall be furnished with factory powered outlet

Non-Fused Disconnect Switch with External Handle
External handle SHALL enable the operator to disconnect unit power with the control box door closed for safety.

Temperature Sensor
Bullet or pencil type sensor that could be used for temperature input such as return air duct temperature.

BAYSENS016 -Temperature Thermistor
The temperature thermistor is used to communicate temperature changes in either the Zone, Return Air, Supply Air or Outside Ambient.

Equipment manufactured by Trane that includes required start-up and sold in North America will not be warranted by Trane unless Trane or its authorized independent Trane commercial sales office performs the startup on the equipment.

Certified AHRI Performance
Packaged Rooftop units cooling, heating capacities and efficiencies are rated within the scope of the Air-Conditioning, Heating & Refrigeration Institute (AHRI) Certification Program and display the AHRI Certified® mark as a visual confirmation of conformance to the certification sections of AHRI Standard 340-360 (I-P) and ANSIZ21.47 and 10 CFR Part 431 pertaining to Commercial Warm Air Furnaces. The applications in this catalog specifically excluded from the AHRI certification program are:
-Ventilation modes
-Heat Recovery.
-Units larger than nominal 63 tons in Cooling
-Evaporative Condensers

Fan Details

Unit Size		**Operating Brake Power**	15.51 bhp
Operating Airflow	12,500 cfm	**Altitude**	0.00 ft
Operating Static Pressure	3.833 in H2O	**Design Temp.**	80.00 F
Operating RPM	1,086 rpm