

BOARD OF COMMISSIONERS OF THE COUNTY OF ALLEGAN

FACILITIES MANAGEMENT-AWARD SHERIFF'S OFFICE AC SYSTEM 8 REPLACEMENT BID

WHEREAS, the Board of Commissioners (Board) approved a \$50,000 appropriation within the 2024 Budget (#401 Public Improvements Fund) to fund the replacement of the aging AC System 8 at the Sheriff's Office; and

WHEREAS, consistent with the County's Purchasing Policy, a request for proposal process was used to solicit competitive bids and those bids have been evaluated by the Project Team to identify the lowest bidder with a satisfactory proposal and references.

THEREFORE BE IT RESOLVED that the Board awards the bid to replace AC System 8 at the Sheriff's Office (Project #1130-24A) to Kalamazoo Mechanical, Inc. of 5507 East Cork Street, Kalamazoo, MI 49048 for the base bid amount of \$150,726; and

BE IT FURTHER RESOLVED that the Board authorizes the County Administrator to approve additional expenditures deemed necessary to complete this project of up to a total project cost of \$170,000; and

BE IT FINALLY RESOLVED that the County Administrator is authorized to make the necessary budget adjustments, and any necessary documents to complete this action are authorized to be signed.



REQUEST FOR ACTION PROCUREMENT OF GOODS AND/OR SERVICES

RFA #: 241-956 RFA Date: 7/25/2024 RFA Submitted By: Patti Wartella

PROJECT/SERVICE: ACSO AC System 8 Replacement Services
Project/Service Description: Replacement of AC System 8 at the ACSO building which is due for replacement per the County's Asset Management Plan.

Project/Contract #: 1130-24 A Contact Name: Carl Chapman
Department: Facilities Management Contact Info: Cchapman@allegancounty.org

PROCUREMENT METHOD: Public Solicitation / RFP
11 Firms invited to bid and bidding opportunity posted to County Website. 2 Bids Received

CONTRACT AWARD: \$150,726.00
Parties - County and: Kalamazoo Mechanical Inc
Contract Duration: Scope of Work Completion
Evaluation Team: Carl Chapman, Valdis Kalnins
References Checked: No - Current or previous vendor with satisfactory performance Debarred: No

PROCUREMENT METHOD: Not Applicable - PO under existing Agreement

CONTRACT AWARD: \$14,749.00
Parties - County and: Grand Valley Automation
Contract Duration: Scope of Work Completion

BUDGETARY ACTION NEEDED: Budget Adjustment or Additional Appropriation Needed
Amount: \$ 120,000 Source: #401 CIP From Account: 401 - Various
Amount: \$ 120,000 Source: #401 CIP To Account: 401-265.263-976.000

FUNDING SOURCE: #401 Capital Improvement Plan
\$ 50,000.00 Approved Appropriation
\$ 120,000.00 Additional Appropriation Requested through this RFA
\$ 170,000.00 Total Funding available if this RFA is approved
\$ - Expenditures to Date
\$ - Committed Funds
\$ 165,475.00 Award Amount

\$ 4,525.00 Funds Remaining

NEW CONTRACT SUMMARY:
Kalamazoo Mechanical Inc Standard County Agreement - No modifications or additional terms
Grand Valley Automation: PO referencing existing Master Agreement

BID PRESENTATION FOR PROJECT #: 1130-24A
Project Name: ACSO AC System 8 Replacement
Service Area: Facilities Management
Date: 7/25/2024
Advertised: County Website and Invitations to bid
Award Recommendation: Kalamazoo Mechanical Inc
Award Criteria: Low bidder with satisfactory proposal and references

VENDOR TABLE	Vendor 1	Vendor 2
Company Name	Kalamazoo Mechanical	Allied Mechanical Services, Inc.
Company Address	5507 E Cork St.	5688 East ML Ave.
City, State, Zip	Kalamazoo, MI 49048	Kalamazoo, MI 49048

SUMMARY COST TABLE

Air Handler Brand/Model	Trane / UCCA	Unspecified
Air Handler Cost:	\$89,475.00	Included
Condenser Unit Brand/Model	Trane / RAUJ	Unspecified 40 Ton Unit
Condenser Unit Cost:	Included Above	Included
All other equip, materials, and supplies	\$13,922.00	Included
Total Labor Cost:	\$34,219.00	Included
All other costs (specify)	\$7,560.00	Included
Perfromance and Payment Bond	\$1,050.00	\$3,000.00
Temp HVAC and Water Balancing	\$4,500.00	Not Included
BASE BID	\$150,726.00	\$242,450.00
Grand Valley Automation - Controls	\$14,749.00	\$14,749.00
TOTAL Project Cost:	\$165,475.00	\$257,199.00



CONTRACT PACKET

Allegan County
3283 122nd Ave
Allegan, MI 49010

ACSO AC System 8 Replacement Services Contract #1130-24A

This contract packet incorporates the following documents:

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ACSO AC System #8 Replacement Services Agreement

This Agreement (“Agreement”) is made by and between the County of Allegan, 3283 122nd Avenue, Allegan, Michigan 49010 (“County”) and

Contractor Name: Kalamazoo Mechanical, Inc

Contractor Address: 5507 E Cork St., Kalamazoo, MI 49048

(“Contractor”). The parties agree as follows:

1. Contractor Services

Contractor shall provide the County with the services, products and supplies described in Attachment A subject to the terms and conditions set forth in this Agreement.

Contractor warrants to the County that the services to be provided under this Agreement shall be of the kind and quality that meet generally accepted standards and shall be performed by qualified personnel. Contractor further warrants to the County that all products and supplies used in conjunction with the services provided under this Agreement shall be new and of acceptable quality and quantity to the County.

2. Payment

The County shall pay Contractor for the services described in Attachment A based on the pricing provided by Contractor in Attachment B. Any additional work must be mutually agreed upon in writing and costs known before that work may commence. Payment shall be provided within thirty days following receipt of invoice commensurate with progress towards Scope of Work completion and (or) satisfactory performance.

3. Term of Agreement

The term of this Agreement shall begin upon signature by both parties and end upon Scope of Work completion and expiration of all warranties and guarantees provided by the Contractor on the work performed, unless terminated earlier in accordance with Section 4 of this Agreement.

4. Termination of Agreement

The County may terminate this Agreement for any or no reason prior to the expiration date set forth in Section 3 of this Agreement by giving thirty days’ written notice to Contractor.

5. Insurance Requirements

Contractor, and any and all of its subcontractors, shall not commence any services or perform any of its other obligations under this Agreement until Contractor obtains the insurance required under this Section. Contractor shall then maintain the required insurance for the full duration of this Agreement. All coverage shall be with insurance companies licensed and admitted to do business in the State of Michigan. All coverages shall be with insurance carriers acceptable to the County.

Insurance policies shall not contain endorsements or policy conditions which reduce coverage provided to the County. Contractor shall be responsible to the County for all costs resulting from both financially unsound insurance companies selected by Contractor and their inadequate insurance coverage. The specified limits of liability do not limit the liability of Contractor. All deductibles and self-insured retentions are the responsibility of Contractor.

A. Worker's Compensation Insurance: Contractor shall procure and maintain during the life of this Agreement, Worker's Compensation Insurance, including Employers' Liability Coverage either in accordance with all applicable statutes of the State of Michigan or have the State of Michigan listed under Section 3 - Other States Insurance in the Contractor's insurance policy.

B. Commercial General Liability Insurance: Contractor shall procure and maintain during the life of this contract, Commercial General Liability Insurance on an "Occurrence Basis" with limits of liability of not less than \$1,000,000 per occurrence and/or aggregate combined single limit, Personal Injury, Bodily Injury, and Property Damage. Coverage shall include the following extensions: (A) Contractual Liability; (B) Products and Completed Operations; (C) Independent Contractors Coverage; (D) Broad Form General Liability Extensions or equivalent, if not already included ; (E) Deletion of all Explosion, Collapse, and Underground (XCU) Exclusions, if applicable.

C. Motor Vehicle Liability Insurance: Contractor shall procure and maintain during the life of this contract Motor Vehicle Liability Insurance, including Michigan No-Fault Coverage, with limits of liability not less than \$1,000,000 per occurrence combined single limit for Bodily Injury, and Property Damage. Coverage shall include all owned vehicles, all non-owned vehicles, and all hired vehicles.

D. Additional Insured: Commercial General Liability Insurance as described above, shall include an endorsement stating the following shall be additional insureds: "Allegan County, all elected and appointed officials, all employees and volunteers, agents, all boards, commissions, and/or authorities and board members, including employees and volunteers thereof." It is understood and agreed that, by naming Allegan County as additional insured, coverage afforded is considered to be primary and any other insurance the County may have in effect shall be considered secondary and/or excess.

E. Cancellation Notice: Worker's Compensation Insurance, Commercial General Liability Insurance, and Motor Vehicle Liability Insurance, as described above, shall be endorsed to state the following: "It is understood and agreed thirty days, ten days for non-payment of premium, Advance Written Notice of Cancellation, Non-Renewal, Reduction, and/or Material Change shall be sent to: Allegan County Administrator, 3283 122nd Avenue, Allegan, MI 49010." If any required insurance expires or is canceled during the term of this Agreement, services and related payments will be suspended and the County may terminate this Agreement immediately.

F. Proof of Insurance Coverage: Under Michigan Compiled Law 500.2270 a certificate of insurance does not include a policy of insurance, insurance binder, or policy endorsement. Contractor must comply with chapter 22A of Michigan Public Act 218 of 1956 by providing a copy of the endorsement showing Allegan County as an additional insured for each type of insurance required in this Agreement at least ten business days prior to commencement of services under this Agreement.

Should the need arise, the County reserves the right to request a copy of any policy mentioned above and if so requested, Contractor agrees to furnish a Certified Copy.

No payments shall be made to Contractor until the necessary insurance documents have been received and approved by the County. If any of the above coverages expire during the term of this Agreement, Contractor shall deliver renewal certificates to the County at least ten days prior to the expiration date.

G. Cancellation Notice: Policy(ies), as described above, shall be endorsed to state the following: “It is understood and agreed thirty days, ten days for non-payment of premium, Advance Written Notice of Cancellation or Non-Renewal shall be sent to the Certificate Holder: Allegan County Administrator, 3283 122nd Avenue, Allegan, MI 49010.” If any required insurance expires or is canceled during the term of this Agreement, services and related payments will be suspended and the County may terminate this Agreement immediately.

H. Proof of Insurance Coverage: Upon execution of this Agreement and at least ten business days prior to commencement of services under this Agreement, Contractor shall provide the County with a Certificate of Insurance as well as the required endorsements. In lieu of required endorsements, a copy of the policy sections where coverage is provided for additional insured and cancellation notice, may be acceptable.

I. Should the need arise, the County reserves the right to request a copy of any policy mentioned above and if so requested, Contractor agrees to furnish a Certified Copy.

J. No payments shall be made to Contractor until current certificates of insurance have been received and approved by the County. If any of the above coverages expire during the term of this Agreement, Contractor shall deliver renewal certificates to the County at least ten days prior to the expiration date.

6. Reporting and Review

Contractor shall report to the County as required by this Agreement and also upon request. Contractor shall cooperate and confer with the County as necessary to ensure satisfactory work progress and performance. All documents submitted by Contractor must be dated and bear the Contractor’s name. All reports made in connection with Contractor’s services are subject to review and final approval by the County. The County may review and inspect Contractor’s activities during the term of this Agreement. After reasonable notice to Contractor, the County may review any of Contractor’s internal records, reports or insurance policies.

7. Indemnification

To the fullest extent permitted by law, Contractor shall hold harmless, defend and indemnify the County and its elected officials, agents, representatives, volunteers and employees from any and all liabilities, claims, liens, fines, demands and costs, including attorney fees, of whatsoever kind and nature, such as, but not limited to, those resulting from injury or death to any persons, including Contractor’s own employees, or from loss or damage to any property, including property owned or in the care, custody or control of the County, in connection with or in any way incident to or arising out of the occupancy, use, operations or performance or non-performance of services by Contractor or its agents, representatives and employees, or any subcontractor or its agents, representatives and employees, in connection with this Agreement. The obligations of Contractor under this Section shall survive any termination of this Agreement or completion of Contractor’s performance under this Agreement.

8. Independent Contractor

To the fullest extent permitted by law, the parties agree that Contractor is an independent contractor; that Contractor and its employees shall in no way be deemed, nor hold themselves out to be, an employee, agent or joint venture partner of the County for any purpose, and shall not be entitled to any fringe benefits of the County, such as, but not limited to, health and accident insurance, life insurance, paid sick or vacation leave, or longevity pay; and that Contractor shall be responsible for withholding and payment of all applicable taxes, including, but not limited to,

income, social security and unemployment taxes, to the proper federal, state and local governments, and maintaining the required workers' compensation insurance, in connection with services rendered by its employees pursuant to this Agreement, and agrees to protect, defend and indemnify the County against such liability.

9. Subcontracting

Contractor shall provide all services covered by this Agreement and shall not subcontract, assign or delegate any of the services without written authorization from the County unless the intent to use subcontractors is clearly stated in the Contractor's Proposal with details provided on the names of the agencies and portion of work to be subcontracted.

Contractor assumes all risk, liability and supervisory responsibility for the actions and / or inactions and performance of all subcontractors used by Contractor in providing services under this Agreement. In choosing to use subcontractors, Contractor shall ensure that all subcontractors comply with, and perform services in manner consistent with, all the terms and conditions set forth in this Agreement. Contractor shall also verify that subcontractors have insurance coverage that matches or exceeds the coverage detailed in Section 5 and make certain that subcontractors do not operate outside the required scope of work.

This Agreement is solely between County and Contractor and County shall have no relationships or obligations to any subcontractors used by Contractor in performing work under this Agreement.

10. County Employees

Contractor shall not hire any County employee to perform any of the services covered by this Agreement without written authorization from the County.

11. Default

In the event of default by Contractor, the County may procure the products or services from other sources and hold Contractor responsible for any excess costs incurred, in addition to all other available remedies.

12. Endorsement Prohibition

Contractor shall not use in any form or medium the name of the County, or supportive documentation or photographs of County projects, facilities, equipment or employees, for public advertising or promotional purposes unless authorized in writing by the County.

13. Compliance with Laws

Contractor shall observe and comply with all applicable federal, state and local laws, ordinances, rules, and regulations including, but not limited to OSHA/MIOSHA requirements, the Elliot-Larsen Civil Rights Act and the Persons with Disabilities Civil Rights Act. Contractor agrees to protect, defend and indemnify the County against liability for loss, cost or damage resulting from actual or alleged violations of law by Contractor.

14. Nondiscrimination

Contractor shall adhere to all applicable federal, state and local laws, ordinances, rules and regulations prohibiting discrimination. Contractor, as required by law, shall not discriminate against a person to be served or any employee or applicant for employment because of race, color,

religion, national origin, age, sex, disability, height, weight, marital status, or any other factor legally prohibited by applicable law.

15. Equal Opportunity Employer

In signing this Agreement, Contractor certifies that it is an Equal Opportunity Employer.

16. Confidentiality

Contractor acknowledges that during the performance of its obligations under this Agreement, it or its personnel may become aware of or receive confidential information relating to or kept by the County, and therefore Contractor agrees that all such information shall be kept confidential and shall not be disclosed without the written authorization of the County.

17. Contractor Personnel

Contractor's employees may be subject to an approved criminal background check prior to entering County property to perform work under this Agreement. Employees of Contractor must wear apparel or other means of identification while performing services under this Agreement.

18. Amendment

This Agreement shall not be modified, nor may compliance with any of its terms be waived, except by written instrument executed by a duly authorized representative from each party.

19. Binding Effect

This Agreement is binding upon and shall inure to the benefit of Contractor and the County and their respective legal representatives, successors and authorized assigns.

20. Waiver

No provision of this Agreement shall be deemed waived and no breach excused, unless such waiver or consent is in writing and signed by the party claimed to have waived or consented. Any consent by any party to, or waiver of, a breach of the other party, whether express or implied, shall not constitute consent to, waiver of, or excuse for any different or subsequent breach.

21. Counterparts

This Agreement may be executed simultaneously in one or more counterparts each of which shall be deemed an original, but all of which together shall constitute one and the same instrument.

22. Severability

If any provision of this Agreement is held to be invalid or unenforceable, it shall be considered to be deleted, and the remainder of the Agreement shall remain in full force and effect. Where the deletion of the invalid provision would result in the illegality and/or unenforceability of this Agreement, this Agreement shall be considered to have terminated as of the date on which the provision was declared invalid.

23. Section Titles

Section titles used in this Agreement are inserted for the convenience of reference only and shall be disregarded when construing or interpreting the provisions in this Agreement.

24. Choice of Law and Forum

This Agreement is governed by and interpreted according to the laws of the State of Michigan. The parties agree that the proper forum and venue for litigation arising out of this Agreement is in Allegan County, Michigan.

25. Royalties and Patents

Contractor shall pay all royalties and license fees and shall defend all suits or claims for infringement of any copyright or patent rights and shall hold and save the County and its officers, agents, servants and employees harmless from any and all loss and liability of any nature or kind whatsoever, including costs and expenses of defense, for or on account of any copyrighted, patented or unpatented invention, process, article or appliance manufactured or used in the performance of the contract, including its use by Contractor and/or Contractor's subcontractors and agents.

26. Debarment or Suspension Status

In signing this Agreement, Contractor certifies that it is not suspended, debarred or ineligible from entering into contracts with the Executive Branch of the Federal Government, or in receipt of a notice of proposed debarment from any State agency or local public body.

27. Conflicts of Interest

In signing this Agreement, Contractor certifies that it has no interest which would conflict with its performance of services under this Agreement. If a possible conflict of interest arises, Contractor shall immediately inform County regarding same.

28. Anti-Collusion Statement

In signing this Agreement, Contractor certifies that it has not divulged to, discussed or compared its bid with other contractors and has not colluded with any other bidder, with the exception of qualified subcontractors, or parties to the bid. No premiums, rebates or gratuities to employees or officials of the County are permitted either with, prior to, or after delivery of any product(s) or service(s). Any such violation will result in the termination of this Agreement, the cancellation and/or return of any item(s), as applicable, and possible exclusion of Contractor from future bidding opportunities.

29. Performance and Payment Bonds

The following bonds or securities shall be secured by the Contractor upon full execution of this Agreement whenever the contract award exceeds \$50,000. These bonds or securities shall be included in this Agreement and become binding on the parties.

A. A performance bond satisfactory to the County, executed by a surety company authorized to do business in the State of Michigan or otherwise secured in a manner satisfactory to the County, in an amount equal to 100% of the price specified in this Agreement; and

B. A payment bond satisfactory to the County, executed by a surety company authorized to do business in the State of Michigan or otherwise secured in a manner satisfactory to the County, for the protection of all persons supplying labor and material to the Contractor or its subcontractors for the performance of the work provided for in this Agreement. The bonds shall be an amount equal to 100% of the price specified in this Agreement.

30. Entire Agreement

This Agreement, including and incorporating the documents listed below, constitutes the entire Agreement. In the event of any conflict or inconsistency in the terms and conditions between these documents, the documents shall govern in following order:

1. This ACSO AC System #8 Equipment Replacement Services Agreement
2. Agreement and Scope of Work Clarifications
3. Attachment A – County’s Scope of Work issued with RFP on 6/26/2024
4. Attachment B – Cost Proposal Form completed and submitted with Contractor’s Proposal
5. Attachment C – Contractor’s Proposal received and opened by County on 07/23/2024

This Agreement contains all the terms and conditions agreed upon by the parties, and no other negotiations, representations, understandings or agreements, written, oral, or otherwise, regarding the subject matter of this Agreement or any part thereof shall have any validity or bind the parties in any way.

The Parties hereby cause this Agreement to be executed by their duly authorized representatives.

Contractor:

County:

Sign: Carson Cornish

Sign: _____

Name: Carson Cornish

Name: Robert J. Sarro

Title: President

Title: Allegan County Administrator

Date: 7-23-24

Date: _____

Agreement and Scope of Work Clarifications

This Agreement hereby incorporates the following County decisions between Scope of Work alternatives, clarifications noticed during the open bid process, the County's acceptance of clarifications requested by Contractor in its proposal, and any additional negotiated terms, conditions or clarifications not incorporated elsewhere in this Agreement:

1. Facilities Management and the Sheriff's office have consulted and agreed that work can be carried out during the day provided sufficient notice and advance coordination of activities by the contractor.
2. During the crane lift of the condensing unit that is located on the roof, the area under and around where the condensing unit is located will need to be evacuated for safety reasons. This is understood, acknowledged and accepted by the County.
3. The County understands that due to anticipated lead times of 4-5 months on HVAC equipment manufacture and delivery, equipment likely won't be available until January. This will preclude an installation before winter and installation during winter months is not practical. The County accepts Contractor's plan to install the new system in March/April of 2025.
4. The County accepts that the system will be down for a minimum of 3-4 weeks during this replacement, and possibly longer, and accepts Contractor's proposal for providing temporary heating and cooling equipment upon request of the County.
5. The County accepts all other Contractor clarifications as stated in its proposal.

be reported to the County on the day such damage occurs. Contractor shall promptly repair damage with like materials when ordered to do so by the County at Contractor's expense. All repairs of damage to existing facilities shall be made to the satisfaction of the County. Failure to repair damage shall be just cause for withholding payment for work, which becomes due.

Building Access: Contractor shall arrange for work to be done during regular business hours which are 8:00 am to 5:00 pm, Monday through Friday excluding holidays with the exception of any power shutdown to the building that may be needed during the conversion which must be arranged for in advance and completed after-hours.

On scheduled days of installation, a representative from Facilities Management will meet the Contractor at a designated location to provide access to the facility. The Facilities Management representative will remain available during installation as needed to provide assistance.

3.2 Equipment Procurement, Delivery and Installation

Upon contract award, Contractor shall:

- 3.2.1 Procure the specified equipment with all necessary options and accessories to integrate it into the existing HVAC system and controls (controls to be supplied by Grand Valley Automation - GVA).

It is the Contractor's responsibility to have verified during the mandatory site visit – the specifications and dimensions for the new equipment, amount of space available at each location to install the new equipment, and what accessories are required to integrate the new unit and have accounted for any special conditions in its bid.

It is also the Contractor's responsibility to have discussed equipment controls with GVA and have a clear understanding of the components and services that each party will be providing to integrate the equipment controls.

- 3.2.2 Either bring new HVAC equipment to the site on the scheduled day of installation or arrange to have it delivered on the scheduled day of installation and be present to accept delivery.

The Allegan County Sheriff's Building has a loading dock that can be made available to Contractor upon request with advanced notice.

It is the Contractor's responsibility to have verified during the mandatory site visit - the layout of the building to determine how equipment is to be moved from the delivery site to the installation site and have accounted for any special conditions in its bid.

- 3.2.3 Coordinate equipment control disconnection and reconnection with Grand Valley Automation (GVA), the County's contractor for building automation services.

*The digital controls for the new handler will be replaced by GVA and **are not to be included in this scope of services or Contractor's bid.***

- 3.2.4 Disconnect, remove and dispose of the existing HVAC equipment and any associated equipment that is no longer needed.
- 3.2.5 Install the new equipment and any equipment controls needed and not being provided by GVA.
- 3.2.6 Reconnect all ducts, vents, gas, electricity, controls (with assistance / in coordination with GVA), etc. to integrate the new equipment to render it fully functional.
- 3.2.7 Conduct a system start-up test to demonstrate and confirm correct installation and proper functioning of the new equipment. Testing shall be conducted with a Facilities Management representative present to verify proper functioning necessary for system for acceptance.

3.3 Scheduling

- 3.3.1 All work is to be scheduled at least five (5) business days in advance and coordinated through:

Carl Chapman
Director of Facilities Management
(269) 673-0207
cchapman@allegancounty.org

Attachment B – Cost Proposal

4. COST PROPOSAL

Unless otherwise noted by the Contractor and agreed to in writing by the County, all costs associated with the scope of work outlined in Attachment A are itemized in this Cost Proposal taking the following into consideration:

4.1 Taxes

The County is exempt from Federal Excise Tax and Michigan Sales Tax.

4.2 Variances

Where a variance exists or other discrepancies are noted between prices on this Cost Proposal Form and prices specified anywhere else in Contractor's proposal, the pricing shown on this Cost Proposal Form shall prevail.

4.3 Quality

All materials used for the manufacture or construction of any items to be provided under this Agreement shall be new. Pricing shall be for items in new condition representing the latest model of the best quality and highest grade of workmanship, unless the option to include supplemental proposals for pre-owned, or demonstrator equipment or materials has been specified by the County.

4.4 Delivery Provisions

All goods procured through this Agreement by the Contractor for the County shall be delivered by the Contractor under the terms Free on Board 640 River St., Allegan, Michigan. Title and risk of loss to the purchased goods does not pass to the County until the items are received by County / installed and accepted as functioning by the County.

4.5 Invoices:

All invoices must reference contract #1130-24A, itemize services rendered and be sent by email to projects@allegancounty.org or mailed to:

Project Management - Accounts Payable
Allegan County Information Services
3283 122nd Avenue
Allegan, MI 49010


4.6 Cost Tables

Once completed, the following cost tables shall establish the pricing to be charged unless otherwise negotiated in writing.

Air Handler and Condenser System #8	Cost
Air Handler Unit Brand: Trane Model: UCCA	\$ 89,475
Condenser Unit Brand: Trane Model: RAUJ	\$ included above
All Other Equipment, Materials and Supplies (including new refrigerant lines)	\$ 13,922
Total Labor Cost	\$ 34,219
All Other Costs (specify): Permit, Equipment Rental, Hoisting, Roof Patching	\$ 7,560
BASE BID (not to exceed):	\$ 145,176
Additional cost of Performance and Payment Bonds if Base Bid exceeds \$50,000.	\$ 1,050
Cost deduction if it is agreed upon by the County that the refrigerant lines do not need replacement	\$

4.7 Cost Proposal Certification

Bid is firm for 45 days (45 days minimum) and signed by the following individual authorized to certify pricing and enter into agreements.

Contractor Name:	Kalamazoo Mechanical, Inc.
Contractor Address:	5507 E Cork St
City, State, Zip:	Kalamazoo, MI 49048
Representative Name (Print):	Carson Cornish
Representative Signature:	
Representative Title:	President

Attachment C – Contractor’s Proposal



PROPOSAL CONTENT – ALLEGAN RFP#1130-24A ACSO AC System 8 Replacement Services

9.1 Company Information:

9.1.1 State the legal name under which Contractor carries out business, the year the company was established and the approximate size of the company in terms of total employees and annual revenues.

Kalamazoo Mechanical, Inc. – Year Incorporated: 1985 – Total Employees: 40

9.1.2 Identify the location of the office from which work described here will be managed and the year that office was established if other than above.

5507 E. Cork Street, Kalamazoo, MI 49048

9.1.3 Provide the contact information (name, title, telephone number and email) for Contractor representative submitting proposal.

Carson Cornish, President – Phone: 269.217.5470 – Email: Carson@KalamazooMechanical.com

9.1.4 Indicate whether any disciplinary action has been taken or is pending against Contractor by state regulatory bodies, professional organizations, or through legal action in the past five years. If no, so state. If yes, detail the circumstances and current status of such action.

No.

9.2 Company Experience:

- Bruce Zache, Field Operations Director, CSM Group, 269-366-7313, bruce.zache@csmgroup.com.

CSM Group. **Lakeview Riverside and West Lake**. \$2,500,000.

Two (2) Elementary schools simultaneously- Summer renovation and addition. Both buildings needed to be complete by fall to allow students to return. Included new Boilers, RTUs, Heat Pumps, ERVs, Classroom UVs. Trane, Mitsubishi, Changeair, and Lochinvar Equipment was utilized.

- Tara Long, Senior Property Coordinator, Bronson Methodist Hospital, 269-341-8189, longt@bronsonhg.org.

Bronson Primary Care (Richland and Kalamazoo Campuses). \$1,400,000.

Two (2)- new 15,000 SF medical facilities from the ground up. AHUs, Boilers, Radiant in-floor, Heat Pumps, Plumbing. KMI was responsible for the complete mechanical including sheetmetal, plumbing, piping, temperature controls, insulation, and test/balancing. This project went through a full commissioning and functional testing process with Tower Pinkster. Daikin, and Lochinvar equipment was utilized.

- Mark Rimes, Project Executive, Elite Companies, 269-330-9535, mark.rimes@elite-companies.com.

HEATING • A/C • REFRIGERATION • SHEET METAL • PIPING

5507 E. CORK STREET, KALAMAZOO, MI 49048 | OFFICE 269.343.5351

Elite Companies - **St Joseph Schools**. \$5,000,000.

Three (3) Elementary schools simultaneously- Summer renovation projects where all three buildings had to be completed by fall to allow students to return- Included New Boilers, RTUs, AHUs, Heat Pumps, Classroom UVs. Trane, Mitsubishi, Airedale, and Fulton Equipment was utilized.

9.3 Equipment:

9.3.1 Describe the air handler unit to be installed including manufacturer, model, etc. Include a spec sheet that clearly identifies the proposed product and any options to be included if more than one model is listed. [Trane Model UCCA](#). See attached spec sheet for details.

9.3.2 Describe the condenser to be installed including manufacturer, model, etc. Include a spec sheet that clearly identifies the proposed product and any options to be included if more than one model is listed. [Trane Model RAUJ](#). See attached spec sheet for details.

9.3.3 State whether your firm would recommend replacing the refrigerant lines between the condenser and air handler or are they in adequate condition to be reused with the new units. [KMI recommends that the refrigerant lines between the condenser and air handler be replaced.](#)

9.3.4 State any kind of manufacturer's warranty or guarantee offered on the equipment and key components. [Trane 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 \("Warranty"\). Five \(5\) years on compressor.](#)

9.4 Delivery and Installation:

9.4.1 Note whether the equipment will be shipped to the County or brought onsite by the Contractor. If to be shipped to the County, confirm a representative from your firm will be on-site to accept delivery of the equipment fixtures and confirm that no special equipment or facilities are needed from the County or note any requested variances. [KMI will deliver the units to the site at the time of installation.](#)

9.4.2 Approximately how many days of on-site work are you anticipating it will take to complete the work? [We anticipate 3-4 weeks to complete installation.](#)

9.4.3 State the current manufacturing lead time for the replacement air handler and condenser if the units are not in stock. [Current lead times are 23 weeks for the air handler and 20 weeks for condenser not including freight shipping times.](#)

9.4.4 Assuming an award notification around August 8, 2024, state when your firm would anticipate scheduling the replacement ACSO AC System 8. [Replacement to be scheduled within two weeks of equipment delivery. Based on lead times, sometime in March or April 2025.](#)

9.4.5 Does your firm intend to use any subcontractors to assist with this project? If yes, name the subcontractor and describe the work to be performed.

Crane company for hoisting – Bucks Crane.
Roofing cutting and patching – Division 7.

9.4.6 Describe the standard labor warranty on the equipment being proposed including any limitations or exclusions. **One (1) year labor warranty.**

9.4.7 State whether your firm would recommend replacing the refrigerant lines between the condenser and air handler or are they in adequate condition to be reused with the new units.

We recommend and have included in our bid replacement of the refrigerant lines between the condenser and the air handler.

9.4.8 Note any proposed variances from the County’s scope of work.
None.

Please see attached clarifications.

Clarifications

1. No structural steel is included in this proposal, and none is anticipated.
2. New vibration isolators for the roof mounted condensing unit and interior AHU are included in this pricing.
3. We intend to reuse the existing smoke detectors.
4. Floor protection for the heavy traffic interior areas is included in this pricing.
5. A certified air and water balance is not included in this pricing. Please add approximately \$1,500 for certified balancing if desired.
6. Mechanical and electrical permits are included.
7. Roof cutting and patching for refrigeration piping penetration are included.
8. Trane Equipment will be utilized. See submittal attached.
9. Please add approximately \$3,000 for temporary HVAC equipment to be utilized if necessary.
10. We intend to hoist the unit from the lawn closest to the condensing unit location.
11. We include all new refrigeration, condensate, and hydronic pipe, valves, fittings, and insulation.
12. We have included all sales taxes based on the tax code. Deduct \$4736 if exempt from tax/use tax.



Air Handler Model UCCA

Unit Overview - UCCAM25C0G0EBZ3200000FJF800DA10000000B1

Application	Unit Size	Supply Fan		External Dimensions (in.)			Weight		Elevation
Indoor unit	25	Airflow	Total Static Pressure	Height	Width	Length	Installed	Rigging	0.00 ft
		12900 cfm	3.256 in H2O	95.818 in	81.000 in	87.084 in	2277.3 lb	2245.8 lb	

Unit Features

Panel	2 in. Foam Injected R-13
Panel Material	Galvanized
Configuration	Vertical motorized impeller fan standard with top front discharge
Coil, Drain and Motor side	Stainless Steel Drain Pan, RH Coil / RH Motor & Drive Location

Unit Electrical

Unit Voltage		Supply Motor(s) + HV + CONT	
Unit Voltage	460/60/3	FLA	11.96 A
		MCA	13.43 A
		Max fuse size	15.00 A
		Supply Motor(s) + HV + CONT	
		Motor FLA	5.87 A

Controls

Controller Type	Terminal block
Controls Options 1	Low limit sw, condensate overflow sw, dirty filter sw and fan status sw

Air Mixing Section

Openings			
Face	Type	Airflow	Hood
Back damper or opening	Damper	12900 cfm	No

Filter

Type	Angled
Merv Rating	2" MERV 8
20 in. x 25 in. Quantity	12
Pressure Drop	0.280 in H2O
Condition	Clean
Airflow	12900 cfm

Heating Section (Pre-Heat)

Coil Construction and Options		Coil Performance	
Rows/Fin Spacing	1 row preheat hydronic coil with 12 fins per inch	Capacity	
Tube Diameter	3/8in. tube diameter (9.5mm)	Total Pre-heat Capacity	559.60 MBh
Coil Options	Aluminum fins, galvanized coil casing, 3/8" coils	Air	
Rigging Weight	104.9 lb	Pre-heat Airflow	12900 cfm
Installed Weight	136.4 lb	Pre-heat Entering Air Temp	45.00 F
		Pre-heat Leaving Air Temp	85.00 F
		Pre-heat Pressure Drop	0.141 in H2O
		Pre-heat Face Velocity	538 ft/min
		Fluid	
		Pre-heat Flow Rate	34.38 gpm
		Pre-heat Entering Temp	180.00 F
		Pre-heat Leaving Temp	147.46 F
		Pre-heat Pressure Drop	6.40 ft fluid
		Pre-heat Tube Velocity	4.13 ft/s
		Reynolds Number (pre-heat)	31292.88
		Pre-heat Type	Water
		Pre-heat Volume	3.84 gal
		AHRI Classification	
		Classification	AHRI ACHC Certified



Cooling Coil Section

Coil Construction and Options		Coil Performance	
Main Coil System Type	DX - 454B	Capacity	
Rows/Fin Spacing	6 row DX roil 12 fins per inch	Total Capacity	502.80 MBh
Tube Diameter	3/8in. tube diameter (9.5mm)	Sensible Capacity	347.13 MBh
Coil Options	Aluminum fins, galvanized coil casing, 3/8" coils	Air	
Refrigerant Circuit Options	Intertwined circuit with 4 DX 3/16" distributors	Cooling Airflow	12900 cfm
Rigging Weight	328.1 lb	Entering Dry Bulb Temp	80.00 F
Installed Weight	328.1 lb	Entering Wet Bulb Temp	67.00 F
		Leaving Dry Bulb Temp	55.48 F
		Leaving Wet Bulb Temp	54.38 F
		Pressure Drop	1.105 in H2O
		Face Velocity	538 ft/min
		Fluid	
		Volume	10.42 gal
		Liquid Temp Entering TXV	115.00 F
		Saturated Suction Temp	47.08 F
		Suction Superheat	8.00 F
		AHRI Classification	
		Classification	Outside scope of AHRI 410

Supply Fan Section

Fan Data		Motor Data	
Fan Type	Vertical motorized impeller fan standard with top front discharge	Power / Fan	Motorized impeller supply fan
Fan Quantity	2.00 Each	Voltage	460.0 V
FEI	0.78	Impeller Fan Control Voltage	9.6 V
Fan Performance		Wire to air static efficiency	0.00 %
Airflow	12900 cfm	Fan Discharge	
Total Static Pressure	3.256 in H2O	Airflow	12900 cfm
Total Brake Power / Fan	4.134 hp	Face Velocity	1214 ft/min
Operating Speed	1655 rpm		
Motor Interface			
Type	ECM		
Voltage	460.0 V		



Static Pressure Section

Filter/Mixing Air Pressure Drop	0.280 in H2O
Cooling Coil Pressure Drop	1.105 in H2O
External Static Pressure	1.500 in H2O
Preheat Air Pressure Drop	0.141 in H2O
Discharge Pressure Drop	0.230 in H2O
Supply Fan Total Static Pressure	3.256 in H2O

AHRI Certification

Data generation date	7/19/2024
Trane Select Assist update number	2850

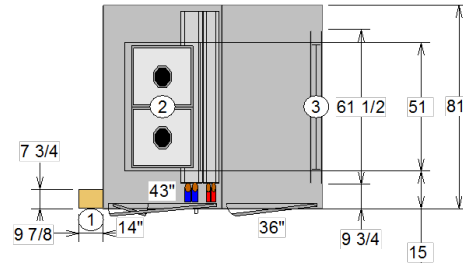
Coil 1 Note: Certified in accordance with the AHRI Forced-Circulation Air-Cooling and Air-Heating Coils Certification Program which is based on AHRI Standard 410 within the Range of Standard Rating Conditions listed in Table 1 of the Standard. Certified units may be found in the AHRI Directory at www.ahridirectory.org.



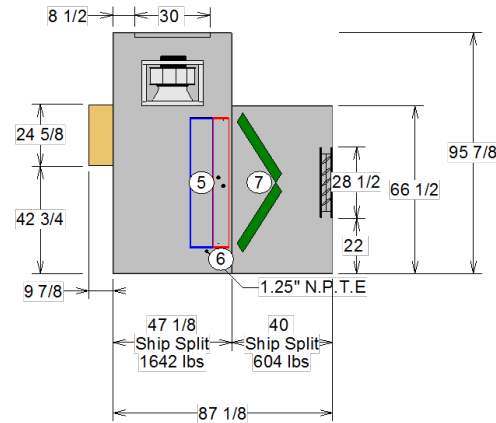
Coil 2 Note: Coil is NOT certified by AHRI. Coil is outside the scope of AHRI Standard 410.



Job Name: Allegan County ACSO AC System 8 Replacement Servic
 Unit Tag: UCCA-25 MI
 Quantity: 1



- 1 External control box Front
24.65 x 7.714
 - 2 Motorized impeller fan -
 - 3 Damper back
28.47 x 61.5
 - 4 1.25" N.P.T.E
 - 5 Cooling coil
 - 6 Heating Coil
 - 7 Angled filters -
- Doors
 14 width x 34 height
 43 width x 27 height
 36 width x 57 height



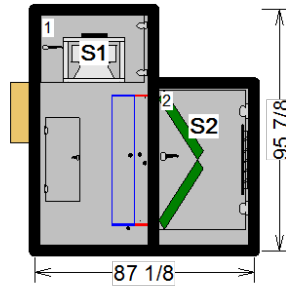
OPENING AND DIMENSIONS MAY VARY FROM CONTRACT DOCUMENTS / RETURN OF APPROVED DRAWINGS CONSTITUTES ACCEPTANCE OF THESE VARIANCES / NOT TO SCALE

Unit size: 25	Job Name: Allegan County ACSO AC System 8 Replacement Servic	Unit Casing: 2in Double Wall Foam
Unit type: Indoor unit	Design airflow: 12900	Proposal Number:
Optional indoor baserail: 6" baserail	Sales Office: Grand Rapids Main Office	Unit Tag: UCCA-25 MI
Pipe cab / curb / paint:		Rigging weight: 2245.8 / Installed weight: 2277.3

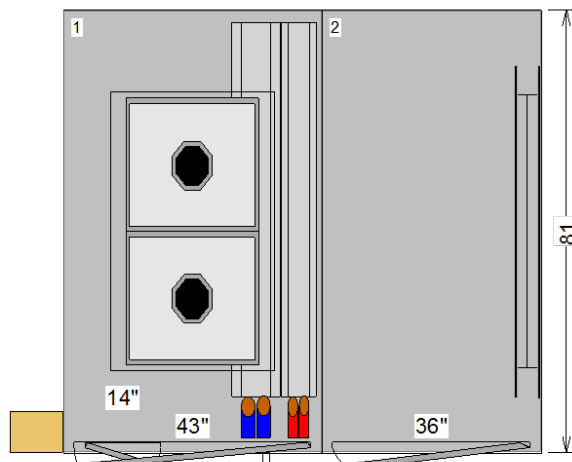




Shipping splits are indicated by thick black lines



Pos #	Module	Length	Weight
1	Base Unit	47 1/8	1641.80
2	Filter / mixing / econ section	40	604.00
		Installed Unit Weight 2245.80 lbs	



Basic Overall Plan View: Top - Measurements in inches

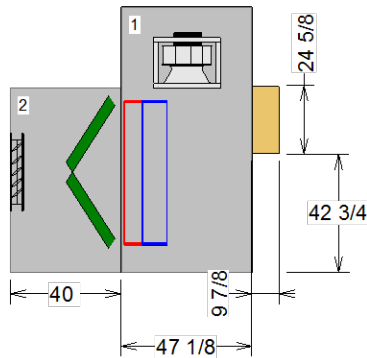
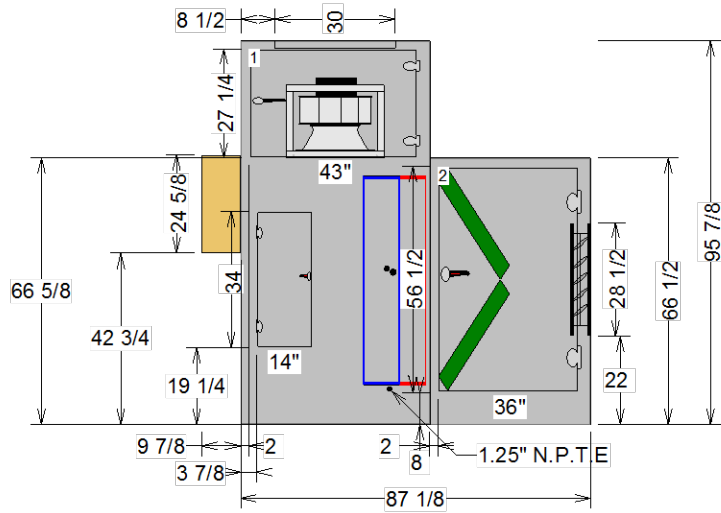
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TRANE

Performance Climate Changer
 Air Handlers

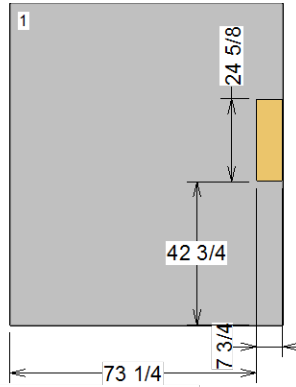


Detailed Elevation View: Left - Measurements in inches

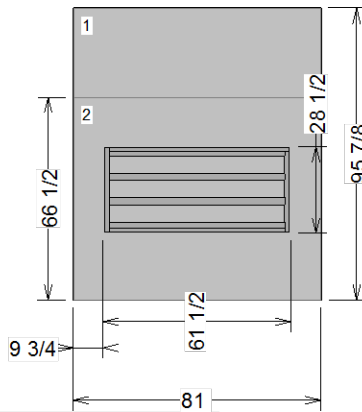
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Optional indoor baserail: 6" baserail	Sales Office: Grand Rapids Main Office	Unit Tag: UCCA-25 MI
Pipe cab / curb / paint:		Rigging weight: 2245.8 / Installed weight: 2277.3





Detailed Elevation View: Front - Measurements in inches



Detailed Elevation View: Back - Measurements in inches

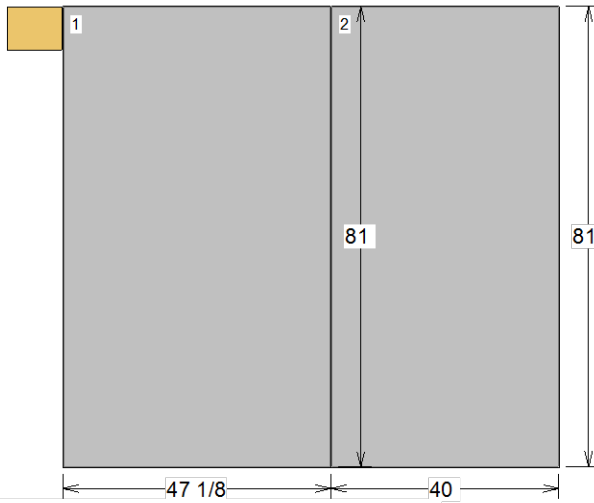
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Unit size: 25	Job Name: Allegan County ACSO AC System 8 Replacement Servic	Unit Casing: 2in Double Wall Foam
Unit type: Indoor unit	Design airflow: 12900	Proposal Number:
Optional indoor baserail: 6" baserail	Sales Office: Grand Rapids Main Office	Unit Tag: UCCA-25 MI
Pipe cab / curb / paint:		Rigging weight: 2245.8 / Installed weight: 2277.3

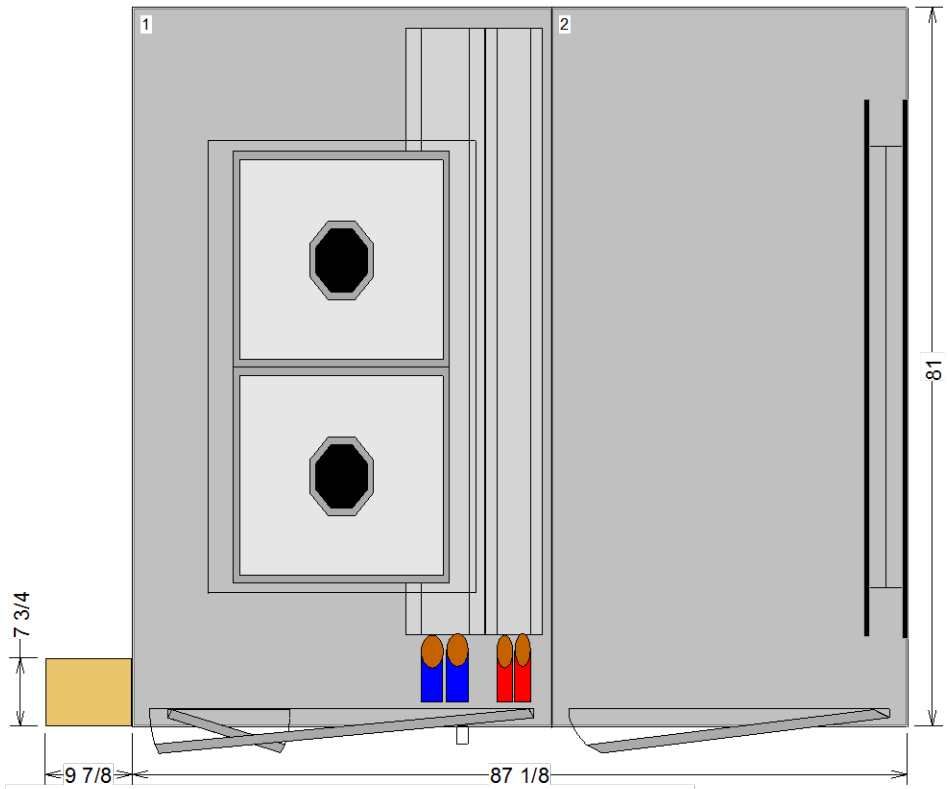


TRANE

Performance Climate Changer
Air Handlers



Left Side of Unit Detailed Plan View: Bottom - Measurements in inches

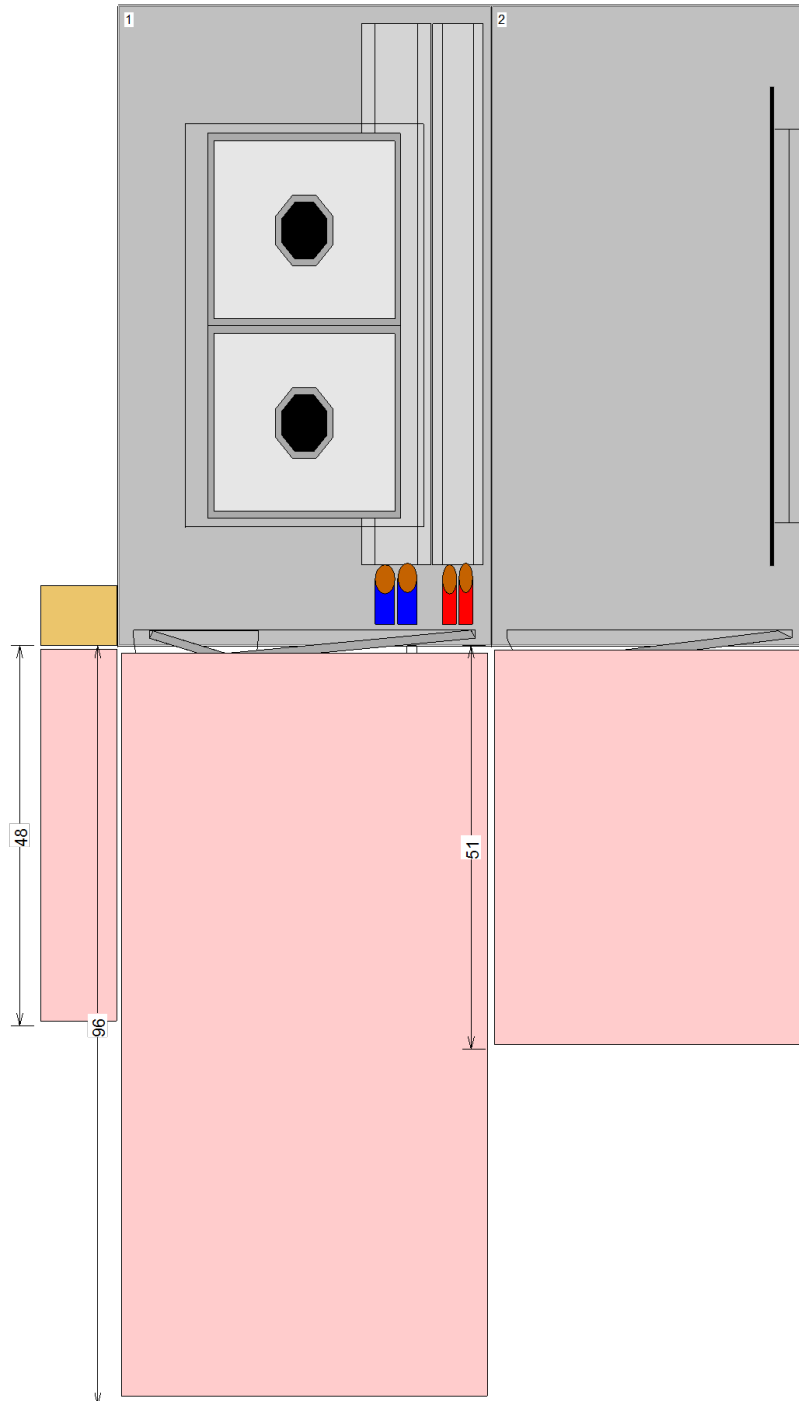


Right Side of Unit Detailed Plan View: Top - Measurements in inches

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

Unit size: 25	Job Name: Allegan County ACSO AC System 8 Replacement Service	Unit Casing: 2in Double Wall Foam
Unit type: Indoor unit	Design airflow: 12900	Proposal Number:
Optional indoor baserail: 6" baserail	Sales Office: Grand Rapids Main Office	Unit Tag: UCCA-25 MI
Pipe cab / curb / paint:		Rigging weight: 2245.8 / Installed weight: 2277.3





Basic Service Clearance - Plan - Measurements in inches

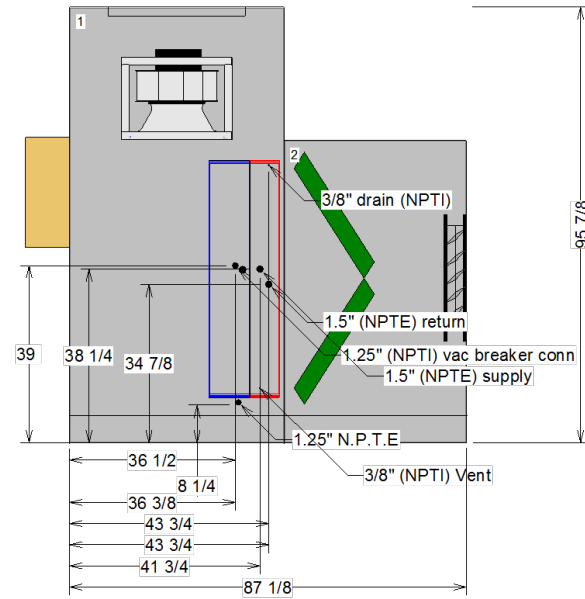
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TRANE

Performance Climate Changer
Air Handlers



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Pipe cab / curb / paint:	Rigging weight: 2245.8 / Installed weight: 2277.3	





Unit Overview

Unit Type	Nominal Capacity	Minimum Installed Weight	Maximum Installed Weight	Total Power (Condenser Only)	Elevation
Condensing unit - Air cooled	40 ton	2482.0 lb	3120.0 lb	46.34 kW	0.00 ft

Unit Features

System Control	No system control
----------------	-------------------



Unit Electrical

Voltage/Phase/Hz	460/60/3	MCA	87.00 A
Unit Mounted Power Connection	Unit disconnect switch (nonfused)	MOP	100.00 A
		RDE	100.00 A

Condenser Fan FLA	1.80 A
Condenser Motor Count	4.00 Each
Condenser Fan Motor Power	3.53 kW

Compressor 1 RLA	18.60 A
Compressor 1 Count	4.00 Each
Compressor 2 RLA	0.00 A
Compressor 2 Count	0.00 Each
Compressor Power	42.81 kW

Note: Connect properly sized and protected power supply wiring to the unit (copper wiring only to the unit)

Condensing Section

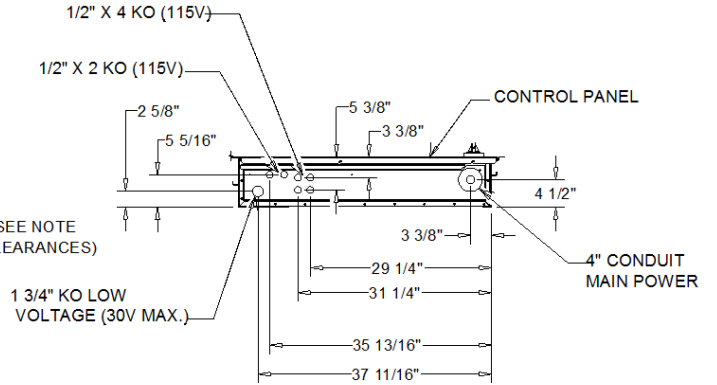
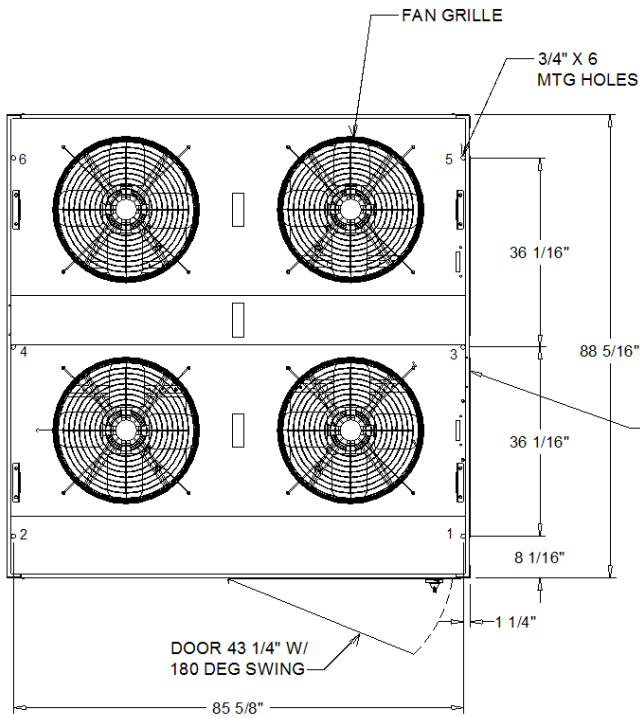
Service Valves	Suction service valve	Application Type	Standalone RAUJ Condenser
Refrigerant Type	R410a	Net Total Capacity	532.95 MBh
Design Ambient Temp	95.00 F	Saturated Suction Temp	43.59 F
Ambient Control	Standard ambient control	Leaving Compressor Temp	124.25 F
EER @ AHRI (Condenser Only)	11.7 EER	Entering Expansion Device Temp	104.64 F

Refrigerant Line Information

Suction Line Size - Horizontal	1-5/8 in.	Est Refrigerant Charge Per Circuit	22.7 lb
Suction Line Size - Vertical	1-5/8 in.	Refrigerant Charge (no evap) - 50 ft	25.0 lb
Liquid Line Size	5/8 in.	Refrigerant Charge (no evap) - 100 ft	37.0 lb
		Refrigerant Charge (no evap) - 150 ft	50.0 lb

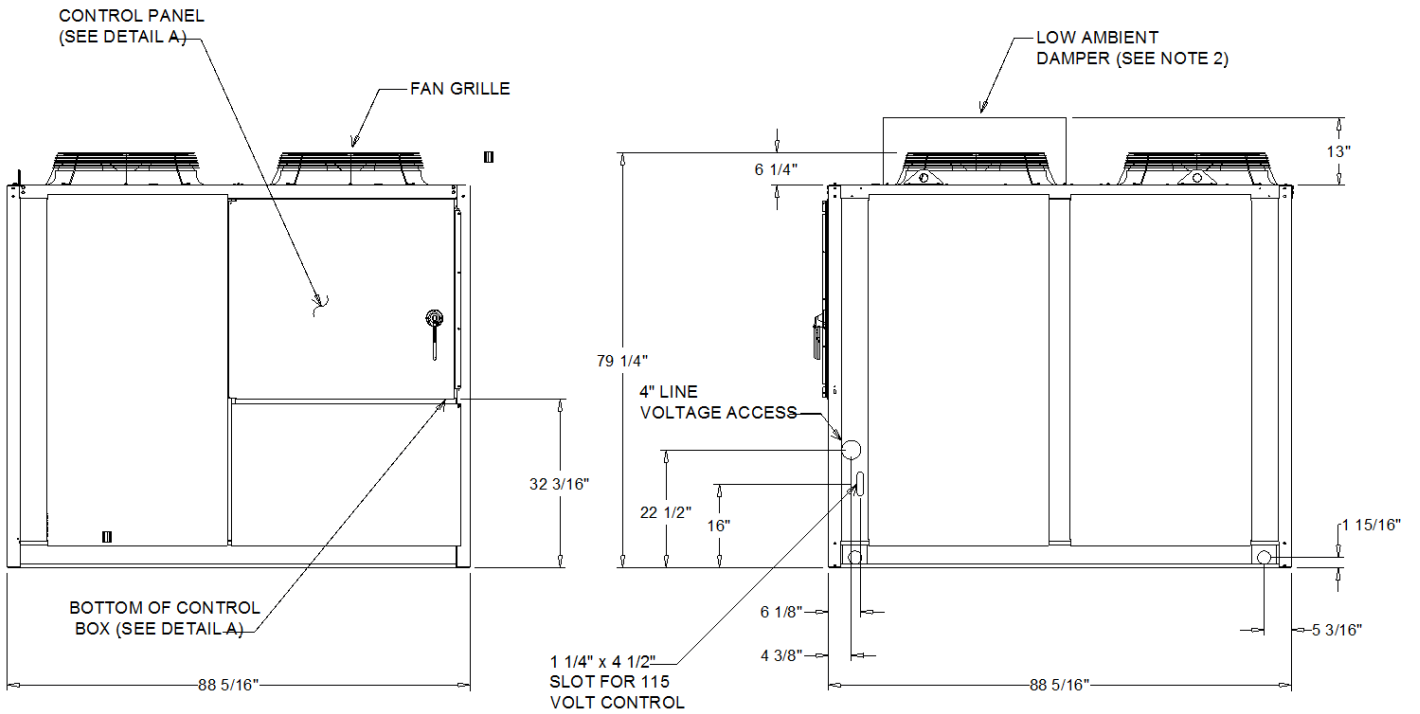
NOTES:

1. SEE CONNECTION DRAWING FOR CONNECTION LOCATION AND SIZES.
2. LOW AMBIENT DAMPER ONLY COMES WITH SELECTED UNIT .
3. FRONT & BACK OF UNIT CLEARANCE 72". LEFT & RIGHT SIDE OF UNIT CLEARANCE 42"



DETAIL A

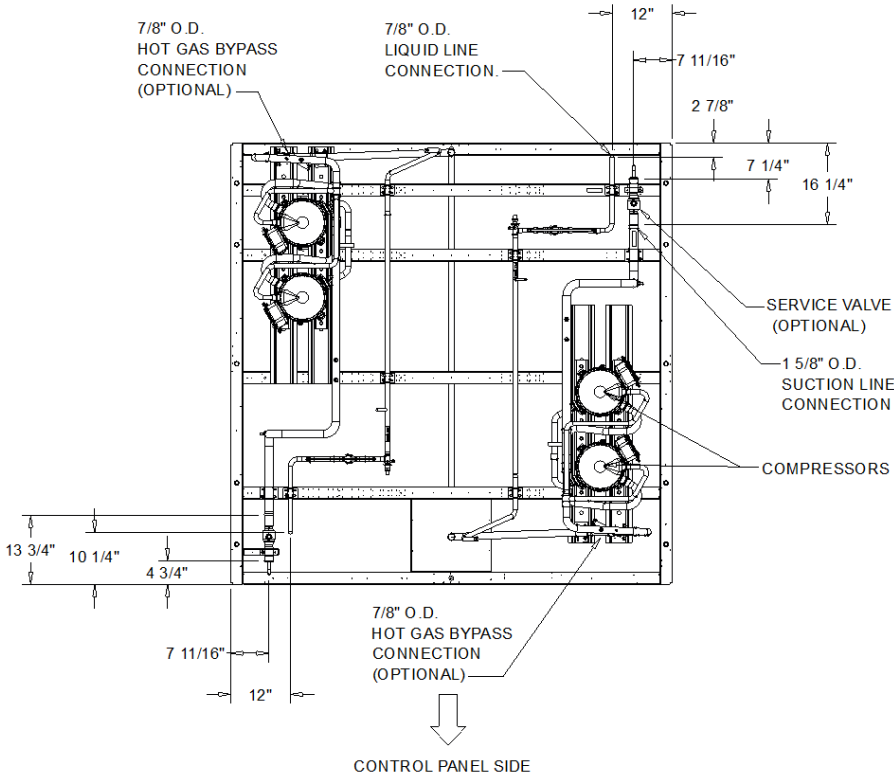
BOTTOM OF CONTROL BOX



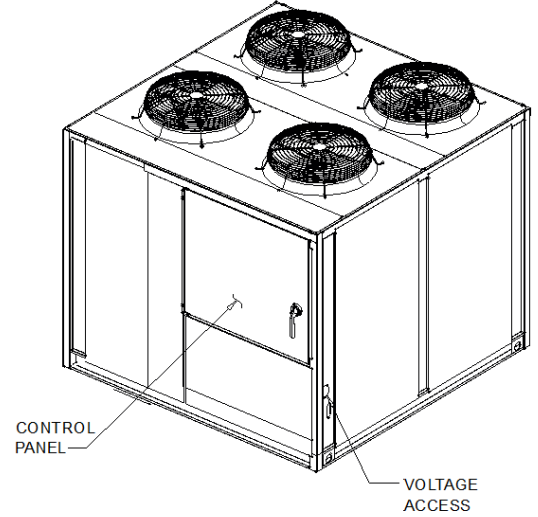
40 TON UNIT

DIMENSIONAL DRAWING

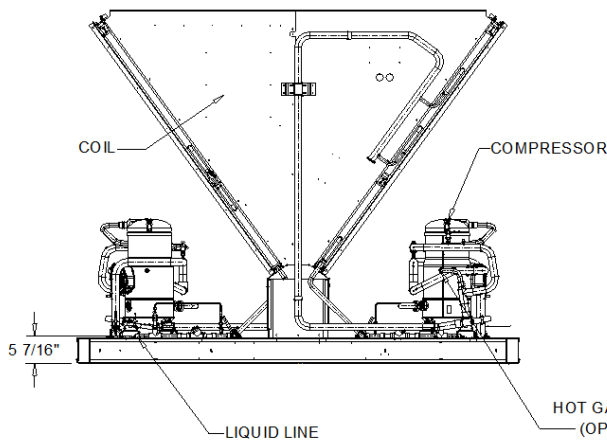
NOTES:
 1. VERIFY WEIGHTS, CONNECTIONS, AND ALL DIMENSIONS WITH TRANE INSTALLATION OPERATION MAINTENANCE (IOM) DOCUMENTS BEFORE INSTALLATION.



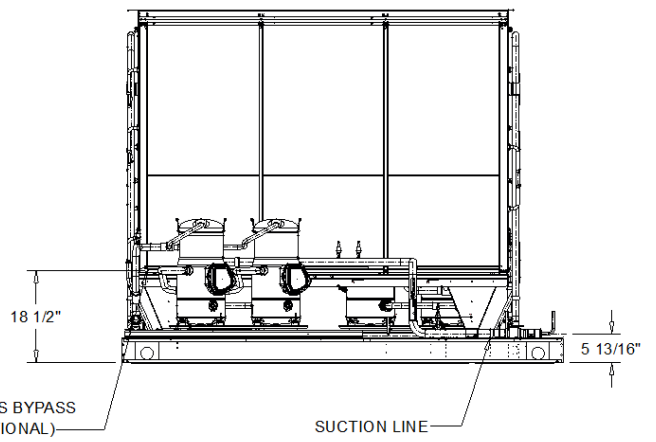
PLAN VIEW OF UNIT
 CONNECTION DRAWING



ORIENTATION VIEW OF UNIT
 ISOMETRIC DRAWING



CONTROL PANEL (LEFT) SIDE VIEW OF UNIT
 CONNECTION DRAWING



BACK VIEW OF UNIT
 CONNECTION DRAWING

40 TON UNIT

DIMENSIONAL CONNECTION DRAWING

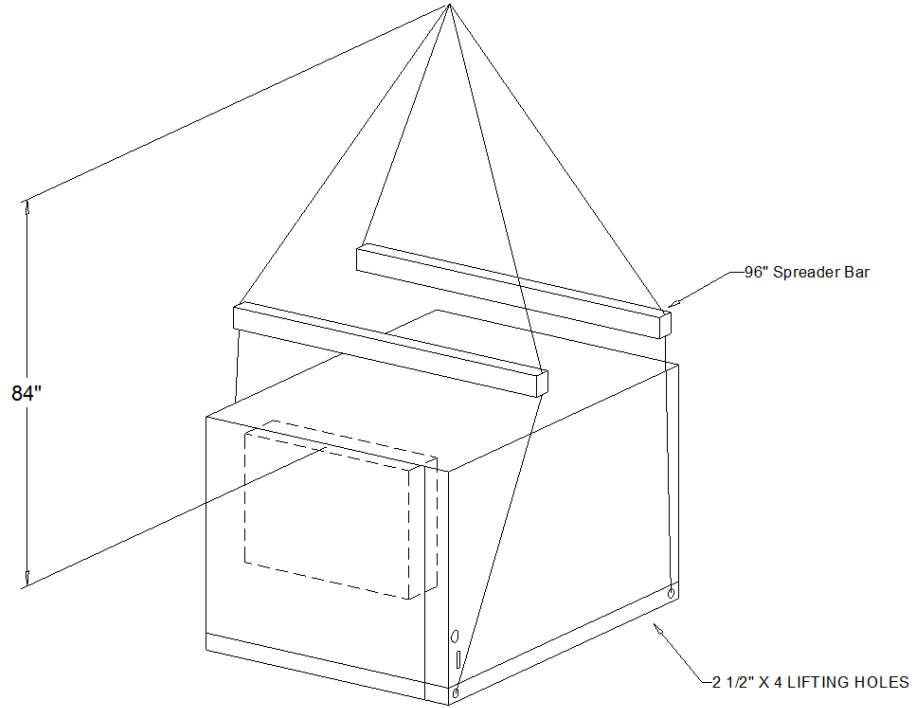


GENERAL ELECTRICAL DATA

<p>GENERAL</p> <p>Tonnage / kW: 40 [140.0 kW] Unit Operating Voltage Range: 414-506 Unit Primary Voltage: 460 Unit Hertz: 60 Unit Phase: 3 Minimum Circuit Ampacity: (3) 87.00 A Maximum Overcurrent Protection Device: (2) 100.00 A Recommended Dual Element Fuse: (4) 100.00 A</p>	<p>OUTDOOR MOTOR</p> <p>Number: 4 Horsepower: 1.0 Motor Speed (rpm): 1,140 Outdoor Motor Full Load amps: 1.8 Outdoor Motor Locked Rotor amps: 9.0</p>
<p>COMPRESSOR</p> <p style="text-align: right;">Circuit A1/A2 - Circuit B1/B2</p> <p>Tons (ea): 10.0 / 10.0 - 10.0 / 10.0 Compressor Rated Load Amps (ea): 18.6 / 18.6 - 18.6 / 18.6 Locked Rotor Amps (ea): 142.0 / 142.0 - 142.0 / 142.0</p>	<p>REFRIGERANT OPERATING CHARGRE (Cond Only, per Circuit)</p> <p>Type: R410A Number of Circuits: 2 Condenser Storage Capacity: 23.5 lb Refrigerant Operating Charge (Condenser Only) : 22.7 lb</p>

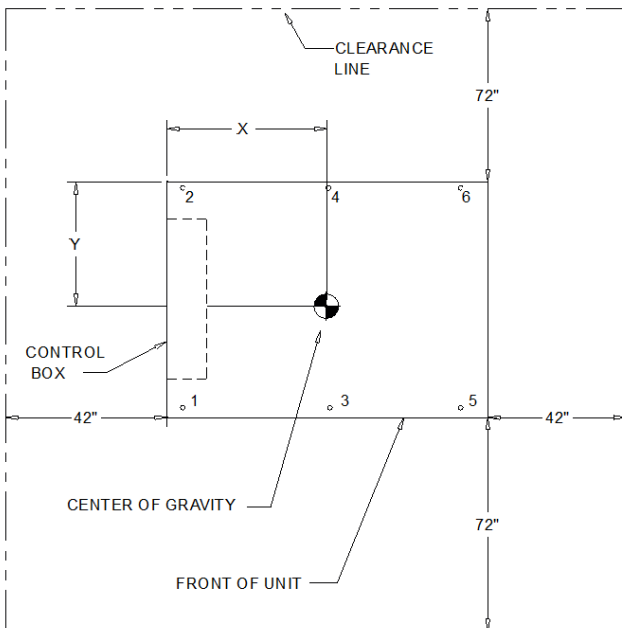
Notes:

1. Electrical data is for each individual motor.
2. Maximum overcurrent protection permitted by nec 440-22 is 225 percent of largest compressor motor RLA plus the remaining motor RLA and FLA values.
3. Minimum circuit ampacity is 125 percent of the largest compressor motor RLA plus the remaining motor RLA and FLA values.
4. Recommended dual element fuse size is 150 percent of the largest compressor motor RLA plus the remaining motor RLA and FLA values.
5. Local codes may take precedence.
6. Electrical data is pulled from TOPSS (performance engine). If data is missing please check TOPSS.



40 TON RIGGING

WEIGHT AND RIGGING



WEIGHTS AND LOAD POINTS

OPERATING:	2532.0 lb
SHIPPING:	2482.0 lb
LOAD POINTS 1 :	452.3 lb
LOAD POINTS 2 :	415.7 lb
LOAD POINTS 3 :	440.3 lb
LOAD POINTS 4 :	403.7 lb
LOAD POINTS 5 :	428.3 lb
LOAD POINTS 6 :	391.8 lb

*ALL WEIGHTS ARE APPROXIMATE

CENTER OF GRAVITY

X:	43 3/8"
Y:	46"

ADD WEIGHTS

SHIPPING:	(4)
OPERATING:	(4)

NOTES:

1. OPERATING WEIGHT INCLUDES REFRIGERANT, OIL AND WATER.
2. SHIPPING WEIGHT INCLUDES REFRIGERANT AND OIL CHARGES
3. THE ACTUAL WEIGHT IS SHOWN ON THE NAMEPLATE. WEIGHT SHOWN REPRESENT TYPICAL SHIPPING AND OPERATING WEIGHTS FOR THE UNIT SELECTED.
4. ADD WEIGHT TO TOTAL WEIGHT OF UNIT
5. IF UNITS IS INSTALLED IN A WELL, THE DEPTH OF THE WELL MUST NOT EXCEED THE TOP HEIGHT OF THE UNIT. THE TOP OF THE UNIT MUST HAVE UNRESTRICTED AIRFLOW. PLEASE REFERENCE RECOMMENDED CLEARANCES.

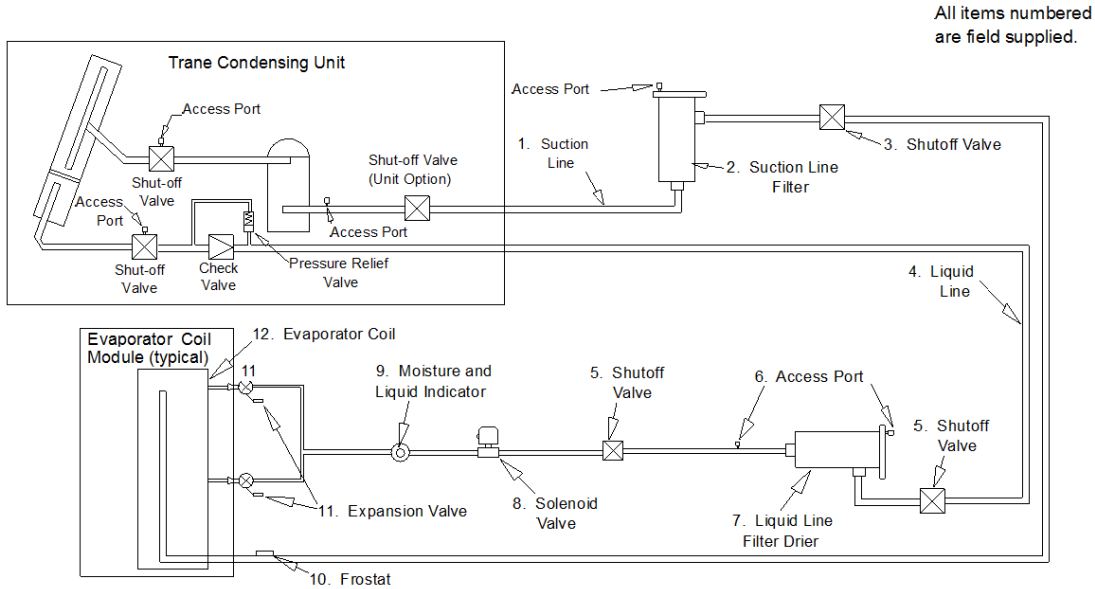
WARNING!

TO PREVENT INJURY OR DEATH AND POSSIBLE EQUIPMENT DAMAGE, DO NOT USE CHAIN (CABLES) OR SLINGS EXCEPT AS SHOWN AND USE CABLES STRONG ENOUGH TO SUPPORT UNIT WEIGHT. TEST LIFT UNIT TO ENSURE PROPER BALANCE AND RIGGING.

40 TON CENTER OF GRAVITY AND CLEARANCES

WEIGHT AND RIGGING

Required Components for Refrigerant Circuits



SUCTION LINE

1. Interconnected Tubing (Suction line)

Maximum of 50 feet if condenser is above evaporator (If risers are more than 50 feet, the application must be viewed by Trane) Refer to SS-APG012-EN for more details

2. Suction Line

Filter Drier 1 / ckt suction filter should be the replaceable-core type, and a clean core should be installed after the system is cleaned up

3. Shut-Off Valve

Manual ball valves for 1 5/8" tubing.

LIQUID LINE

4. Interconnected Tubing (Liquid Line)

Refer to applications guide SS-APG012 - EN for vertical & horizontal piping limitations.

5. Shut-Off Valve

2 Manual ball valves

6. Access Port

Port used to determine suction pressure. This port is usually a Schraeder valve with a core.

7. Liquid Line

Filter Drier 1 / ckt liquid filter should be the replaceable-core type, and a clean core should be installed after the system is cleaned up.

8. Solenoid Valves

Liquid line requires a field supplied and installed isolation solenoid valve within 10 feet of the evaporator. The suggested solenoid uses a 120-volt service and requires code-compliant wiring to the RAUJ condensing unit.

Note: Trim solenoids cannot be used. They are not compatible with Microchannel condenser coils

9. Moisture and Liquid Indicator

One moisture-indicating sight glass is to be installed in the main liquid line.

EVAPORATOR

10. Froststat (not required) - The control is mechanically attached to the outside of the refrigerant line, near the evaporator, and wired to the unit control panel See application guide SS-APG012-EN for selection information.

11. Expansion Valves - See application guide SS-APG012-EN for selecting valve quantity and size.
 Note: Units with Microchannel condenser coils applied with DX systems will require 30 percent bleed valves.

Expansion Valves for 20-60T MCHE (30 percent Bleed) Evap Circuit Tonnage

REFRIGERANT	MIN.	MAX.	SPORLAN MODEL NUMBER	TRANE PART
R-410A	2.0	3.0	BBIZE-1-1/2-GA (BP/30)	VAL 10487
R-410A	2.5	3.5	BBIZE-2-GA (BP/30)	VAL 10488
R-410A	3.5	5.0	BBIZE-3-GA (BP/30)	VAL 10489
R-410A	4.5	7.0	BBIZE-4-GA (BP/30)	VAL 10490
R-410A	6.0	8.5	BBIZE-5-GA (BP/30)	VAL 10491
R-410A	7.0	10.0	BBIZE-6-GA (BP/30)	VAL 10492
R-410A	8.0	13.5	BBIZE-8-GA (BP/30)	VAL 10493
R-410A	11.0	17.5	BBIZE-12-1/2-GA (BP/30)	VAL 10494
R-410A	14.0	21.5	BBIZE-15-GA (BP/30)	VAL 10495
R-410A	17.0	28.5	OZE-20-GA (BP/30)	VAL 10496
R-410A	22.0	30.0	OZE-25-GA (BP/30)	VAL 10497

- (1) Ton per distributor, choose the valve that matches the evap coil circuit capacity that it serves.
 (2) Provide and install one expansion valve per distributor.

Refrigerant Charge and Maximum Line Length

Total interconnecting line length (per circuit)	50 ft	100 ft	150 ft
Condenser and line set approx. refrigerant charge (per circuit) - evaporator charge not included	25.0 lb	37.0 lb	50.0 lb

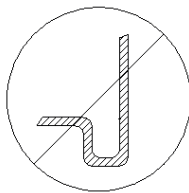
If total interconnecting line length is more than 150 feet, the application must be reviewed by Trane.

**Contact product support for information on refrigeration components and piping applications assistance
 ***Data in table is pulled from TOPSS selection. If N/A is present, please refer to unit IOM.

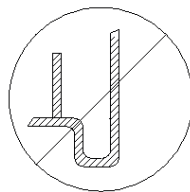
Installation Guidelines

Suction Line Piping

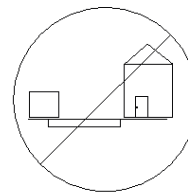
1. Do not use suction line traps.



2. Do not use double risers.



3. Avoid putting suction lines underground.

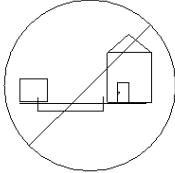


4. Route suction lines as short and direct as possible.
 5. Slope suction line away from the condensing unit 1 inch for every 10 feet.
 6. Insulate suction line.
 7. The suction filter should be located as close to the compressors as possible.

Required Components for Refrigerant Circuits Continued

Liquid Line Piping

1. Avoid putting liquid lines underground.



2. Route liquid lines as short and direct as possible.
3. Slope liquid line away from the condensing unit 1 inch for every 10 feet.
4. Only insulate liquid lines that pass through heated areas.
5. Wire solenoid valve per field connection diagram.
6. The liquid line filter drier should be as close to the solenoid valve as possible.

Evaporator Piping

1. Install TXV directly to unit liquid connection.
2. Locate TXV bulb midway between 90F bends on top of suction tube as shown.
3. Secure bulb to tube with the two clamps provided by the manufacturer and insulate bulb.
4. Install the TXV equalizer line close to & downstream of the bulb, on top of the horizontal suction line.
5. Install frostat per kit instructions on the common suction line as close to the evaporator as possible.

See SS-APG012-EN for DX evaporator piping details.

CUSTOMER WIRE SELECTION TABLE	
POWER WIRE SELECTION TO DISCONNECT SWITCH (1S1)	CONNECTOR WIRE RANGE (1) #14 -- 1/0
FACTORY INSTALLED DISCONNECT SWITCH SIZE 100 AMP	
POWER WIRE SELECTION TO MAIN TERMINAL BLOCK (1TB1)	CONNECTOR WIRE RANGE (1) #6 -- 350 MCM
TERMINAL BLOCK SIZE 335 AMP	
CONTROL WIRE SELECTION	
WIRE GAUGE	OHMS PER: 12000"
18 AWG	8
16 AWG	5
14 AWG	3
	MAX WIRE LENGTH
	6000"
	12000"
	24000"
SHIELDED WIRE TABLE	
WIRE GAUGE	MAX WIRE LENGTH
16 AWG	6000"
14 AWG	12000"

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 INCLANT 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.

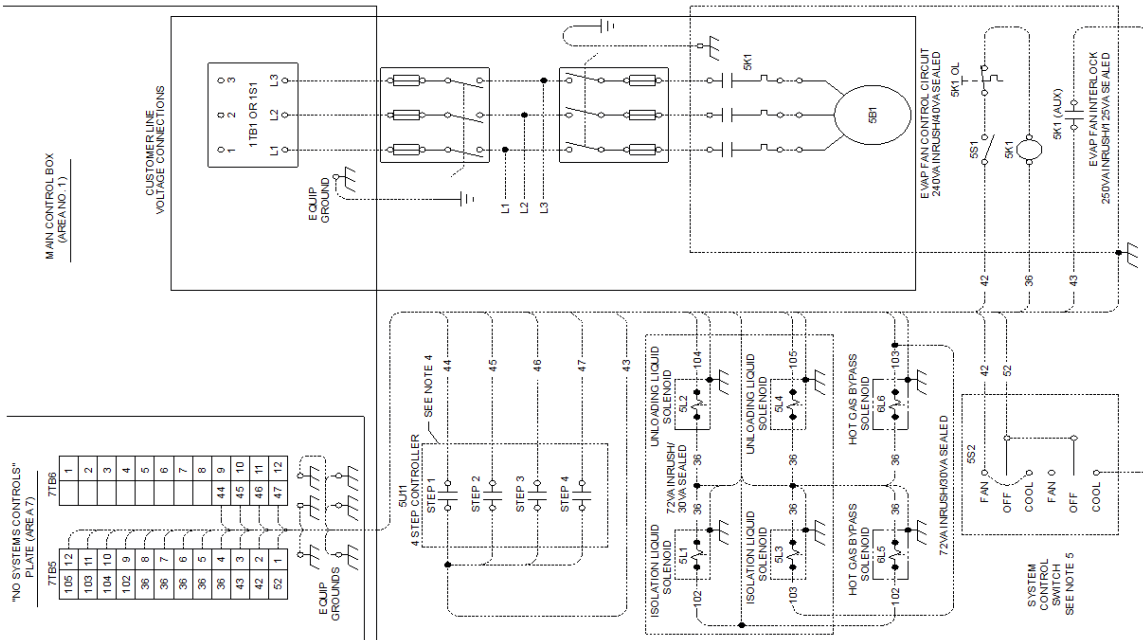
CAUTION

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



- NOTES:**
1. All wiring and components shown dashed to be supplied and installed by customer in accordance with local and national electrical codes.
 2. All wiring to be NEC Class 1 based on 60 degree C wire unless specified.
 3. CAUTION - Do not run low voltage wire (30 volts maximum) in conduit or raceway with higher voltage wire.
 4. Step controller min rating - NO contacts = 150 VA Inrush/75 VA sealed; NC contacts = 80 VA Inrush/40 VA sealed.
 5. Suggested system control switch is Cutler Hammer 7562K5 2pdt toggle switch.