



TRANE®

Village of Orland Park – Recreation Administration Building HVAC System Retrofit



Recreation Administration Building HVAC System Retrofit



14600 Ravinia Ave, Orland Park, IL 60462

Proposal Prepared For:

Village of Orland Park:

- George Koczwara - *Village Manager*
- Joel Van Essen - *Director of Public Works*
- Mike Mazza - *Operations Manager - Natural Resources & Facilities*
- Scott Hiland - *Supervisor - Natural Resources & Facilities*

Date:

August 21st, 2024

Payment Terms:

Net 30

Delivery Terms:

Freight Allowed and Prepaid – F.O.B Factory

Proposal Expiration Date:

30 Days

OMNIA Partners Cooperative Quote Number: R1-192278-23-002

OMNIA Partners Cooperative Contract Number: Trane Racine #3341

Trane® Commercial HVAC, Upper Midwest Region
7100 S. Madison Street Willowbrook, IL 60527 United States Tel (888) 770-6469

TRANE
TECHNOLOGIES



Trane® Turnkey Scope of Work

“Scope of Work” and notations within are based on the existing as-built drawings of the facility and on the multiple site surveys performed by the Trane Turnkey team with the Village of Orland Park staff’s assistance and input.

High Efficiency System Retrofit with Thermal “Ice” Storage

Demolition/Removals:

- Disconnect/demo/remove/dispose two (2) multi-zone hot deck/cold deck AHUs, piping, and required ductwork
- Demo controls on AHUs, maintain communication link integrity
- Return air and supply air ductwork to zones to be reused
- Disconnect/demo/remove/dispose hot water lines to make room for VAVs
- Disconnect/demo/remove/dispose Condensing Units, piping, refrigerant lines
- Refrigerant recovery and disposal per EPA guidelines
- Disconnect/demo/remove/dispose existing gas water heater
- Disconnect/demo/remove/dispose two (2) louvers on building exterior
- Electrical disconnects, make-safe

Design/Furnish/Install New

- **New Trane high efficiency 40-ton Air-Cooled Chiller (Qty 1),**
 - o With ice-making mode, pump package, VFDs, and buffer tank
 - o Exterior mounted
- **New Thermal Storage (“Ice”) Tanks (Quantity 3)**
 - o Exterior mounted
- **New Trane Custom Air Handling Unit (AHU), (Qty 1)**
 - o With chilled water coil and VFD on supply fan
 - o Air-side economizing & space pressure control with new modulating relief air damper
 - o In Mechanical Room
- **New Trane VAV Boxes (Qty 10)**
 - o With hot water reheat, modulating hot water valves, and piping packages
 - o Wireless zone sensors to replace existing sensors in areas served
 - o In Mechanical Room, serving all 10 zones
- **Piping for Chiller, Ice Tanks, and AHU (incl insulation for chilled water pipe)**



- **New 120-Gallon Electric Domestic Water Heater** (Lochinvar LHC-119)
- **New Exterior Louvers (Qty 2)**
- **New Exhaust/relief damper with actuator**
- **Flush Existing Hot Water Piping**
- **Crane**
- **Cartage, rigging, hoisting, logistics, and work-planning for safe removal and installation**
- **Mechanical Installation**
 - Set/install thermal storage tanks
 - Set/install air-cooled chiller
 - Set/install AHU
 - Flush existing hot water piping
 - Medium pressure ductwork
 - Medium pressure round supply duct
 - Hang/set VAV boxes (Qty 10)
 - Low pressure supply ductwork
 - Return & outside air ductwork
 - Ductwork insulation
 - New hot water mains
 - Hot water run-out, hose kits, and insulation
 - Fill-test-flush
 - Piping for Chiller, Ice Tanks, and AHU
 - Glycol solution and glycol feed system
 - Insulation for chilled water and hot water piping
 - Set/install electric water heater
 - Set/install exhaust/relief damper
- **Electrical Installation**
 - Fuses and power feed to new AHU
 - Fuses and power feed to new chiller
 - Circuit breaker and power feed to new electric water heater
 - Circuit breaker and power feed for glycol feed system
 - 24V power feed to new VAV boxes
 - BAS Controls wiring
 - Install wireless sensors
 - Install field mounted control devices for AHU



- **New Trane Controls and Air-Fi Wireless for VAVs. Controls and BAS tie-ins to existing system beyond scope of this project.**
 - o Trane SC+ controller with enclosure
 - o Trane UC600 ice plant controller with sensor
 - o Graphics and programming for SC+ interface
 - o Communication and integration to AHU, VAVs, Chiller and Ice Plant Controller
 - o BACnet capability for open integration into any other existing BAS systems.
 - o No tie-in to existing hot water boiler system
 - **Modifications to exterior concrete pad as needed**
 - **Testing & Balancing**
 - **Trane Startup of Equipment**
 - **Install architectural wall between OA/EA louvers (outside)**
 - **Drip/Condensate Pump System**
 - o Wiring excluded from budget, to be done by others (*radio/antenna firm*)
-

Trane® Turnkey Inclusions for Village of Orland Park

- Mechanical & Electrical Engineering
- Trane Turnkey Project Manager, Single Point of Contact
- All required Installation/Subcontracting for Scope of Work items
- Engineered Design Plans provided to Village of Orland Park
- Temporary storage of all equipment, delivery to jobsite on day of installation
- Trane will assist with document prep required for Permits
- Performance and Payment Bond
- 5-year parts/labor warranty on all Trane Equipment
- 1-year labor and materials warranty on all non-Trane Equipment



General Exclusions:

- Permit costs & fees
- Taxes
- Asbestos abatement
- Premium time
- Upgrading existing non-compliant code issues outside of our Scope of Work
- Temporary services
- Any other services not explicitly outlined within this Proposal

Total Turnkey Proposal Price.....\$1,260,765

Respectfully submitted,

Tim Reynolds

Account Executive

Trane® Turnkey Contracting

312.771.7436 cell

Timothy.Reynolds@trane.com

Acceptance of Proposal By

Customer: Village of Orland Park

Name

Title

Date

Signature

Purchase Order #: _____

OMNIA Partners Cooperative Quote Number: R1-192278-23-002

**TERMS AND CONDITIONS – COMMERCIAL INSTALLATION**

"Company" shall mean Trane U.S. Inc. for Work performed in the United States or Trane Canada ULC for Work performed in Canada.

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 AND EQUIPMENT PRICES 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. Prices in the Proposal are subject to change at any time upon notice to Customer. 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 counteroffer 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 counteroffer will be deemed accepted. Notwithstanding anything to the contrary herein, 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. 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. 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. Within thirty (30) days following Customer acceptance of the Proposal without addition of any other terms and conditions of sale or any modification, Customer shall provide notification of release for immediate production at Company's factory. Prices for Work are subject to change at any time prior to shipment to reflect any cost increases related to the manufacture, supply, and shipping of goods. This includes, but is not limited to, cost increases in raw materials, supplier components, labor, utilities, freight, logistics, wages and benefits, regulatory compliance, or any other event beyond Company's control. If such release is not received within 6 months after date of order receipt, Company reserves the right to cancel any order. If shipment is delayed due to Customer's actions, Company may also charge Customer storage fees. Company shall be entitled to equitable adjustments in the contract price to reflect any cost increases as set forth above and will provide notice to Customer prior to the date for which the increased price is to be in effect for the applicable customer contract. In no event will prices be decreased.

5. 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.

6. 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.

7. 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.

8. 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. 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.

9. 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.

10. 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.

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11. 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.

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

13. 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.

14. 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.

15. 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.

16. 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.

17. 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).

18. Indemnity. To the fullest extent permitted by law, Company and Customer shall indemnify, defend and hold harmless each other from 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.

19. 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, INCLUDING CONTAMINANTS LIABILITIES, 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.

20. CONTAMINANTS 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 COMPANY BE LIABLE UNDER THIS AGREEMENT OR OTHERWISE FOR ANY INDEMNIFICATION, ACTION OR CLAIM, WHETHER BASED ON WARRANTY, CONTRACT, TORT OR OTHERWISE, FOR ANY BODILY INJURY (INCLUDING DEATH), DAMAGE TO PROPERTY, OR ANY OTHER LIABILITIES, DAMAGES OR COSTS RELATED TO CONTAMINANTS (INCLUDING THE SPREAD, TRANSMISSION, MITIGATION, ELIMINATION, OR CONTAMINATION THEREOF) (COLLECTIVELY, "CONTAMINANT LIABILITIES") AND CUSTOMER HEREBY EXPRESSLY RELEASES COMPANY FROM ANY SUCH CONTAMINANTS LIABILITIES.**

21. 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



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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.

22. 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 Company; 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 ("Third-Party Product(s)") are not warranted by Company and have such warranties as may be extended by the respective manufacturer. **CUSTOMER UNDERSTANDS THAT COMPANY IS NOT THE MANUFACTURER OF ANY THIRD-PARTY PRODUCT(S) AND ANY WARRANTIES, CLAIMS, STATEMENTS, REPRESENTATIONS, OR SPECIFICATIONS ARE THOSE OF THE THIRD-PARTY MANUFACTURER, NOT COMPANY AND CUSTOMER IS NOT RELYING ON ANY WARRANTIES, CLAIMS, STATEMENTS, REPRESENTATIONS, OR SPECIFICATIONS REGARDING THE THIRD-PARTY PRODUCT THAT MAY BE PROVIDED BY COMPANY OR ITS AFFILIATES, WHETHER ORAL OR WRITTEN. 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 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. ADDITIONALLY, COMPANY MAKES NO REPRESENTATION OR WARRANTY OF ANY KIND 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 COMPANY 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, THIRD-PARTY PRODUCT, OR ANY COMPONENT THEREOF, SERVICES OR OTHERWISE AND CUSTOMER HEREBY SPECIFICALLY ACKNOWLEDGES AND AGREES THERETO.**

23. 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.

24. 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.

25. 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.

26. 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.

27. 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

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Village of Orland Park – Recreation Administration Building HVAC System Retrofit

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.

28. 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.

29. Building Automation Systems and Network Security. Customer and Trane acknowledge that Building Automation System (BAS) and connected networks security requires Customer and Trane to maintain certain cybersecurity obligations. Customer acknowledges that upon completion of installation and configuration of the BAS, the Customer maintains ownership of the BAS and the connected network equipment. Except for any applicable warranty obligations, Customer is solely responsible for the maintenance and security of the BAS and related networks and systems. In the event there is a service agreement between Trane and Customer, Trane will provide the services as set forth in the service agreement. In order to maintain a minimum level of security for the BAS, associated networks, network equipment and systems, Customer's cybersecurity responsibilities include without limitation:

1. Ensure that the BAS, networks, and network equipment are physically secure and not accessible to unauthorized personnel.
2. Ensure the BAS remains behind a secure firewall and properly segmented from all other customer networks and systems, especially those with sensitive information.
3. Keep all Inbound ports closed to any IP Addresses in the BAS.
4. Remove all forwarded inbound ports and IP Addresses to the BAS.
5. Maintain user login credentials and unique passwords, including the use of strong passwords and the removal of access for users who no longer require access.
6. Where remote access is desired, utilize a secure method such as Trane Connect Secure Remote Access or your own VPN.
7. For any Trane services requiring remote data transfer and/or remote user access, configure the BAS and related firewall(s) per instructions provided by Trane. This typically includes configuring Port 443 and associated firewall(s) for Outbound only.
8. Perform regular system maintenance to ensure that your BAS is properly secured, including regular software updates to your BAS and related network equipment (i.e., firewalls).

Any and all claims, actions, losses, expenses, costs, damages, or liabilities of any nature due to Customer's failure to maintain BAS security responsibilities and/or industry standards for cybersecurity are the sole responsibility of the Customer.

1-26.251-10(0123)
Supersedes 1-26.251-10(1221)

**SECURITY ADDENDUM**

This Addendum shall be applicable to the sale, installation and use of Trane equipment and the sale and provision of Trane services. "Trane" shall mean Trane U.S. Inc. for sales and services in the United States, or Trane Canada ULC for sales and services in Canada.

1. **Definitions.** All terms used in this Addendum shall have the meaning specified in the Agreement unless otherwise defined herein. For the purposes of this Addendum, the following terms are defined as follows:

"Customer Data" means Customer account information as related to the Services only and does not include HVAC Machine Data or personal data. Trane does not require, nor shall Customer provide personal data to Trane under the Agreement. Such data is not required for Trane to provide its Equipment and/or Services to the Customer.

"Equipment" shall have the meaning set forth in the Agreement.

"HVAC Machine Data" means data generated and collected from the product or furnished service without manual entry. HVAC Machine Data is data relating to the physical measurements and operating conditions of a HVAC system, such as but not limited to, temperatures, humidity, pressure, HVAC equipment status. HVAC Machine Data does not include Personal Data and, for the purposes of this agreement, the names of users of Trane's controls products or hosted applications shall not be Personal Data, if any such user chooses to use his/her name(s) in the created accounts within the controls product (e.g., firstname.lastname@address.com). HVAC Machine Data may be used by Trane: (a) to provide better support services and/or products to users of its products and services; (b) to assess compliance with Trane terms and conditions; (c) for statistical or other analysis of the collective characteristics and behaviors of product and services users; (d) to backup user and other data or information and/or provide remote support and/or restoration; (e) to provide or undertake: engineering analysis; failure analysis; warranty analysis; energy analysis; predictive analysis; service analysis; product usage analysis; and/or other desirable analysis, including, but not limited to, histories or trends of any of the foregoing; and (f) to otherwise understand and respond to the needs of users of the product or furnished service. "Personal Data" means data and/or information that is owned or controlled by Customer, and that names or identifies, or is about a natural person, such as: (i) data that is explicitly defined as a regulated category of data under any data privacy laws applicable to Customer; (ii) non-public personal information ("NPI") or personal information ("PI"), such as national identification number, passport number, social security number, social insurance number, or driver's license number; (iii) health or medical information, such as insurance information, medical prognosis, diagnosis information, or genetic information; (iv) financial information, such as a policy number, credit card number, and/or bank account number; (v) personally identifying technical information (whether transmitted or stored in cookies, devices, or otherwise), such as IP address, MAC address, device identifier, International Mobile Equipment Identifier ("IMEI"), or advertising identifier; (vi) biometric information; and/or (vii) sensitive personal data, such as, race, religion, marital status, disability, gender, sexual orientation, geolocation, or mother's maiden name.

"Security Incident" shall refer to (i) a compromise of any network, system, application or data in which Customer Data has been accessed or acquired by an unauthorized third party; (ii) any situation where Trane reasonably suspects that such compromise may have occurred; or (iii) any actual or reasonably suspected unauthorized or illegal Processing, loss, use, disclosure or acquisition of or access to any Customer Data.

"Services" shall have the meaning set forth in the Agreement.

2. **HVAC Machine Data; Access to Customer Extranet and Third Party Systems.** If Customer grants Trane access to HVAC Machine Data via web portals or other non-public websites or extranet services on Customer's or a third party's website or system (each, an "Extranet"), Trane will comply with the following:
 - a. **Accounts.** Trane will ensure that Trane's personnel use only the Extranet account(s) designated by Customer and will require Trane personnel to keep their access credentials confidential.
 - b. **Systems.** Trane will access the Extranet only through computing or processing systems or applications running operating systems managed by Trane that include: (i) system network firewalls; (ii) centralized patch management; (iii) operating system appropriate anti-malware software; and (iv) for portable devices, full disk encryption.
 - c. **Restrictions.** Unless otherwise approved by Customer in writing, Trane will not download, mirror or permanently store any HVAC Machine Data from any Extranet on any medium, including any machines, devices or servers.



- d. Account Termination. Trane will terminate the account of each of Trane's personnel in accordance with Trane's standard practices after any specific Trane personnel who has been authorized to access any Extranet (1) no longer needs access to HVAC Machine Data or (2) no longer qualifies as Trane personnel (e.g., the individual leaves Trane's employment).
 - e. Third Party Systems. Trane will provide Customer prior notice before it uses any third party system that stores or may otherwise have access to HVAC Machine Data, unless (1) the data is encrypted and (2) the third party system will not have access to the decryption key or unencrypted "plain text" versions of the HVAC Machine Data.
3. Customer Data: Confidentiality. Trane shall keep confidential, and shall not access or use any Customer Data and information that is marked confidential or by its nature is considered confidential ("Customer Confidential Information") other than for the purpose of providing the Equipment and Services, and will disclose Customer Confidential Information only: (i) to Trane's employees and agents who have a need to know to perform the Services, (ii) as expressly permitted or instructed by Customer, or (iii) to the minimum extent required to comply with applicable law, provided that Trane (1) provides Customer with prompt written notice prior to any such disclosure, and (2) reasonably cooperate with Customer to limit or prevent such disclosure.
4. Customer Data: Compliance with Laws. Trane agrees to comply with laws, regulations governmental requirements and industry standards and practices relating to Trane's processing of Customer Confidential Information (collectively, "**Laws**").
5. Customer Data: Information Security Management. Trane agrees to establish and maintain an information security and privacy program, consistent with applicable HVAC equipment industry practices that complies with this Addendum and applicable Laws ("**Information Security Program**"). The Information Security Program shall include appropriate physical, technical and administrative safeguards, including any safeguards and controls agreed by the Parties in writing, sufficient to protect Customer systems, and Customer's Confidential Information from unauthorized access, destruction, use, modification or disclosure. The Information Security Program shall include appropriate, ongoing training and awareness programs designed to ensure that Trane's employees and agents, and others acting on Trane's, behalf are aware of and comply with the Information Security Program's policies, procedures, and protocols.
6. Monitoring. Trane shall monitor and, at regular intervals consistent with HVAC equipment industry practices, test and evaluate the effectiveness of its Information Security Program. Trane shall evaluate and promptly adjust its Information Security Program in light of the results of the testing and monitoring, any material changes to its operations or business arrangements, or any other facts or circumstances that Trane knows or reasonably should know may have a material impact on the security of Customer Confidential Information, Customer systems and Customer property.
7. Audits. Customer acknowledges and agrees that the Trane SOC2 audit report will be used to satisfy any and all audit/inspection requests/requirements by or on behalf of Customer. Trane will make its SOC2 audit report available to Customer upon request and with a signed nondisclosure agreement.
8. Information Security Contact. Trane's information security contact is Local Sales Office.
9. Security Incident Management. Trane shall notify Customer after the confirmation of a Security Incident that affects Customer Confidential Information, Customer systems and Customer property. The written notice shall summarize the nature and scope of the Security Incident and the corrective action already taken or planned.
10. Threat and Vulnerability Management. Trane regularly performs vulnerability scans and addresses detected vulnerabilities on a risk basis. Periodically, Trane engages third-parties to perform network vulnerability assessments and penetration testing. Vulnerabilities will be reported in accordance with Trane's cybersecurity vulnerability reported process. Trane periodically provides security updates and software upgrades.
11. Security Training and Awareness. New employees are required to complete security training as part of the new hire process and receive annual and targeted training (as needed and appropriate to their role) thereafter to help maintain compliance with Security Policies, as well as other corporate policies, such as the Trane Code of Conduct. This includes requiring Trane employees to annually re-acknowledge the Code of Conduct and other Trane policies as appropriate. Trane conducts periodic security awareness campaigns to educate personnel about their responsibilities and provide guidance to create and maintain a secure workplace.



12. Secure Disposal Policies. Policies, processes, and procedures regarding the disposal of tangible and intangible property containing Customer Confidential Information so that wherever possible, Customer Confidential Information cannot be practicably read or reconstructed.
13. Logical Access Controls. Trane employs internal monitoring and logging technology to help detect and prevent unauthorized access attempts to Trane's corporate networks and production systems. Trane's monitoring includes a review of changes affecting systems' handling authentication, authorization, and auditing, and privileged access to Trane production systems. Trane uses the principle of "least privilege" (meaning access denied unless specifically granted) for access to customer data.
14. Contingency Planning/Disaster Recovery. Trane will implement policies and procedures required to respond to an emergency or other occurrence (i.e. fire, vandalism, system failure, natural disaster) that could damage Customer Data or any system that contains Customer Data. Procedures include the following
 - (i) data backups; and
 - (ii) formal disaster recovery plan. Such disaster recovery plan is tested at least annually.
15. Return of Customer Data. If Trane is responsible for storing or receiving Customer Data, Trane shall, at Customer's sole discretion, deliver Customer Data to Customer in its preferred format within a commercially reasonable period of time following the expiration or earlier termination of the Agreement or, such earlier time as Customer requests, securely destroy or render unreadable or undecipherable each and every original and copy in every media of all Customer's Data in Trane's possession, custody or control no later than [90 days] after receipt of Customer's written instructions directing Trane to delete the Customer Data.
16. Background checks Trane shall take reasonable steps to ensure the reliability of its employees or other personnel having access to the Customer Data, including the conducting of appropriate background and/or verification checks in accordance with Trane policies.
17. DISCLAIMER OF WARRANTIES. EXCEPT FOR ANY APPLICABLE WARRANTIES IN THE AGREEMENT, THE SERVICES ARE PROVIDED "AS IS", WITH ALL FAULTS, AND THE ENTIRE RISK AS TO SATISFACTORY QUALITY, PERFORMANCE, ACCURACY AND EFFORT AS TO SUCH SERVICES SHALL BE WITH CUSTOMER. TRANE DISCLAIMS ANY AND ALL OTHER EXPRESS OR IMPLIED REPRESENTATIONS AND WARRANTIES WITH RESPECT TO THE SERVICES AND THE SERVICES PROVIDED HEREUNDER, INCLUDING ANY EXPRESS OR IMPLIED WARRANTY OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, OR THAT THE SERVICES WILL OPERATE ERROR-FREE OR UNINTERRUPTED OR RETURN/RESPONSE TO INQUIRIES WITHIN ANY SPECIFIC PERIOD OF TIME.

November 2023



ORLAND PARK



Recreation Administration

14600 S. Ravinia Ave
Orland Park, IL 60462

Project:
HVAC Upgrade

14600 S. Ravinia Ave
Orland Park, IL 60462

Recreation
Administration

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1	7-26-24	35% Design

TITLE PAGE

T-1



SATELLITE VIEW

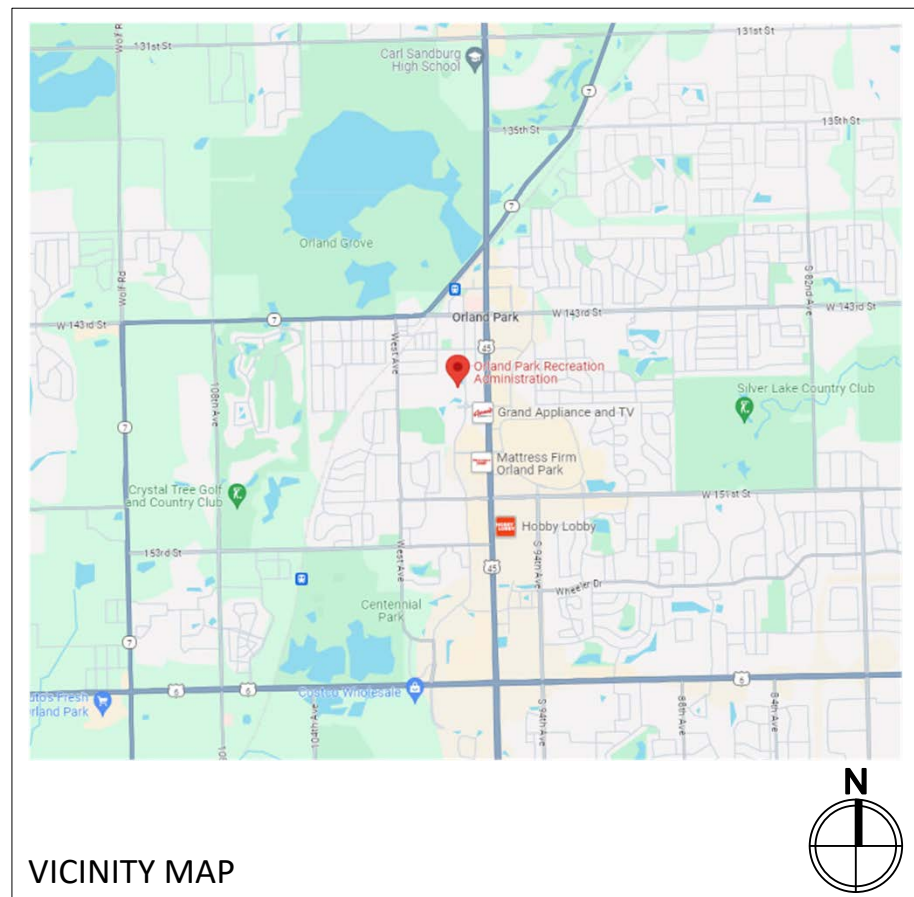
Crane Location

Truck Staging

NEW WORK:
Demo (2) Multi-Zone Air Handlers
with DX Condensing Units

Install (1) new Air Handler with (10)
HW Reheat VAVs, (1) Air Cooled
Chiller, & (3) Ice Storage Tanks

50'



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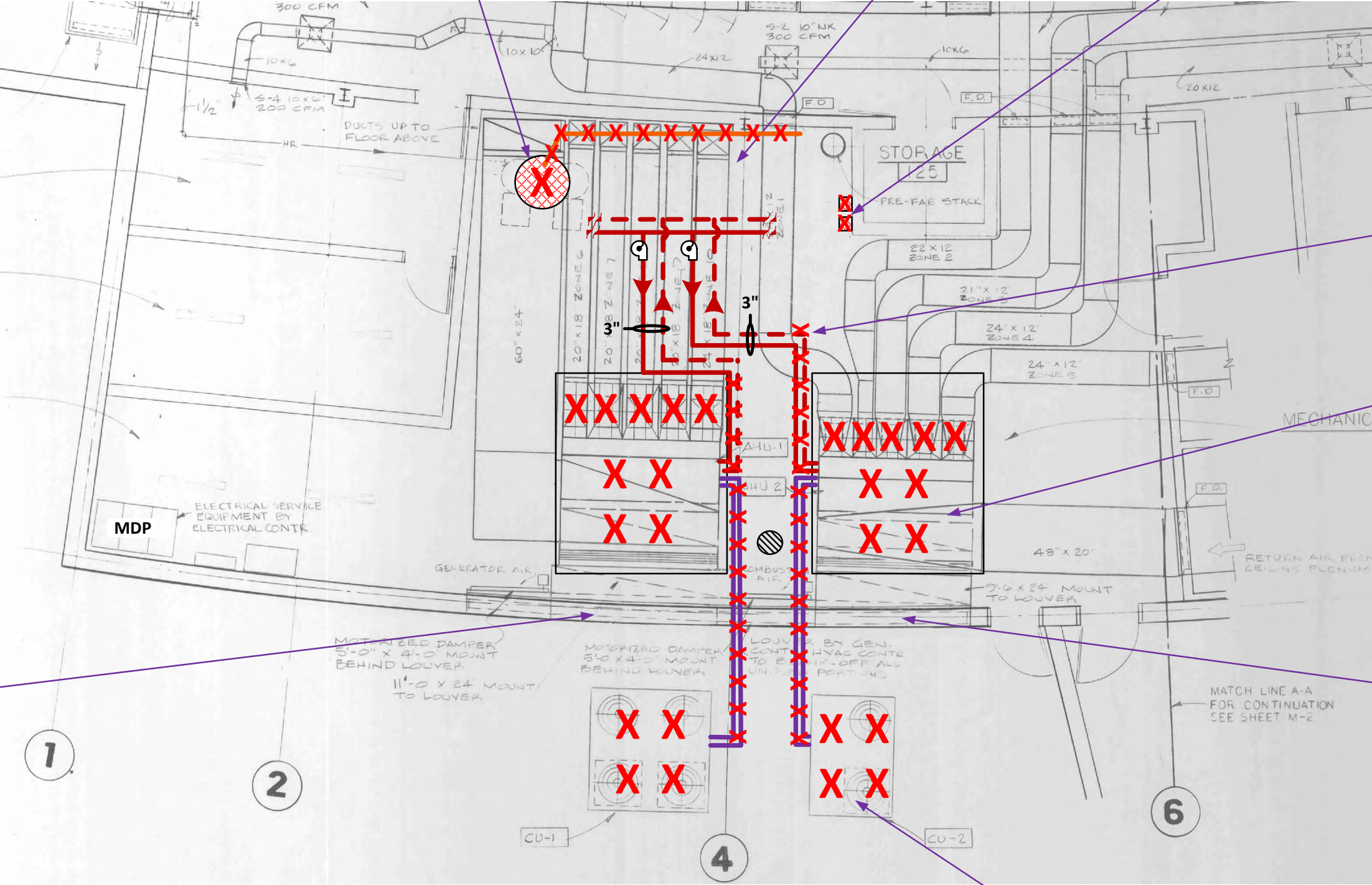
DEMOLITION PLAN

M-1

Demo 125 gallon gas water heater
& flue, cap flue connection

Existing boilers & pumps to remain

Demo AHU supply fan starters



Demo hot water piping
back to make room for
new VAVs

Demo (2) Multi-zone air
handlers, RA ductwork
and SA ductwork for zones
to remain and be reused

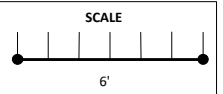
Demo existing 13' x 4'
louver on building
exterior

Demo existing 15' x 4'
louver on building
exterior

Demo (2) condensing units &
refrigerant lines

Demolition

- Demo Notes:**
- Disconnect and make safe power from all equipment to be removed
 - Demo (2) multi-zone hot deck/cold deck air handlers
 - Demo controls on AHUs, maintain communication link integrity
 - RA ductwork and SA ductwork to zones to be reused
 - Demo hot water lines back to make room for new VAVs
 - Recover refrigerant from (2) condensing units and demo
 - Demo refrigerant lines
 - Concrete pads for condensing units to remain
 - Demo 125 gallon gas water heater, to be replaced
 - Demo (2) louvers on building exterior, to be replaced



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INSTALLATION PLAN

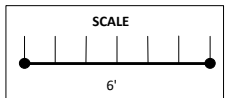
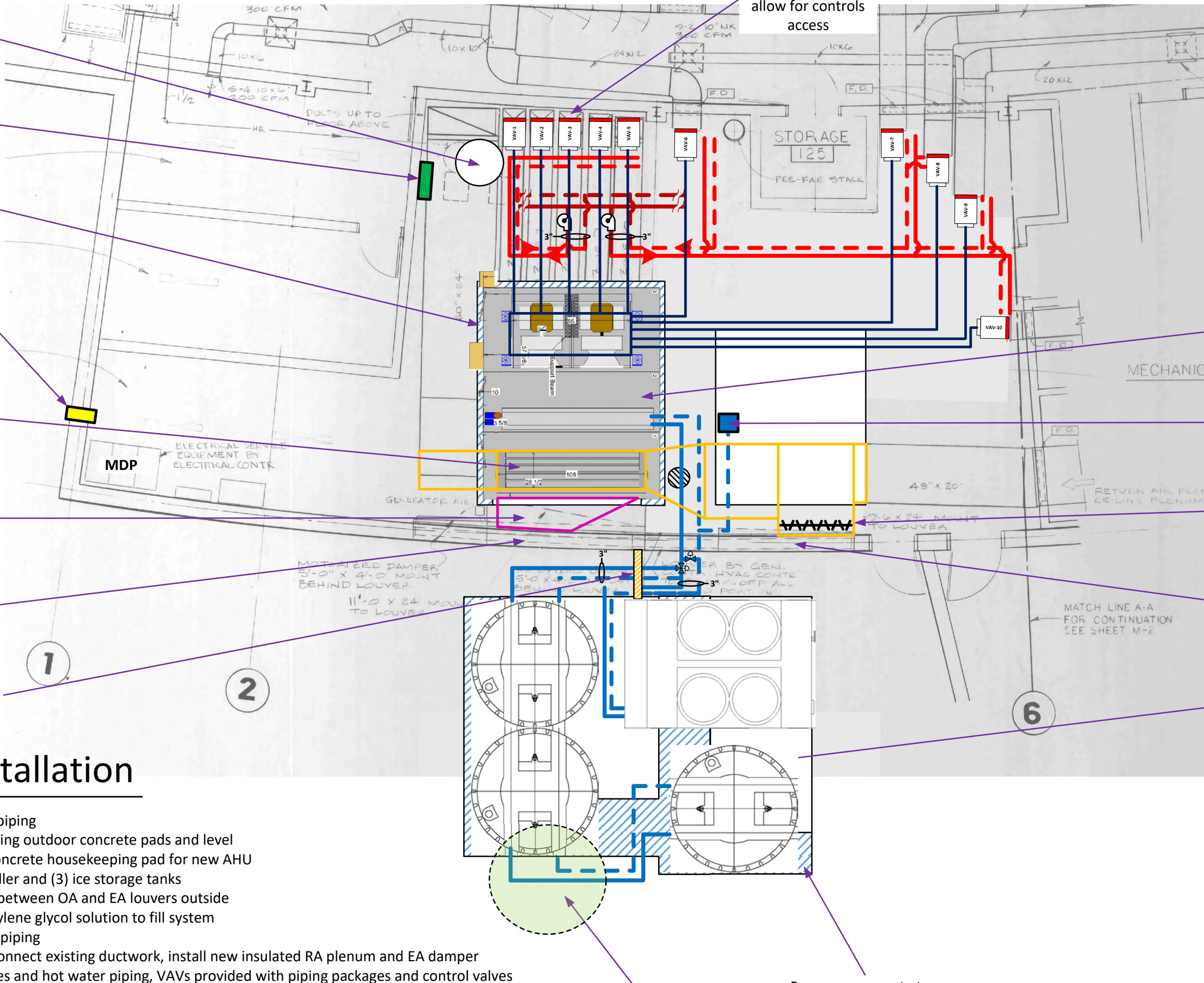
M-2

- Install new electric water heater, connect to existing piping and circulation pump
- Install new BAS enclosure
- Extend existing concrete pad
- Plug existing hole for antenna wiring, core new hole and install link seal, antenna wiring by others
- Extend existing RA ductwork to new 70"x 30" top RA plenum, damper is integral to AHU & insulate
- New insulated 44" x 48" ductwork from back OA on AHU to existing louver, damper is integral to AHU
- Replace existing 15' x 4' louver on building exterior
- Install new 4' x 8' non-perforated architectural wall between OA and EA, mount at wall and concrete pad

Installation

Install Notes:

- Flush existing hot water piping
- Extend and connect existing outdoor concrete pads and level
- Extend existing indoor concrete housekeeping pad for new AHU
- Install new air cooled chiller and (3) ice storage tanks
- Install architectural wall between OA and EA louvers outside
- MC to provide 35% propylene glycol solution to fill system
- MC to fill, test, and flush piping
- Install new air handler, connect existing ductwork, install new insulated RA plenum and EA damper
- Install (10) new VAV boxes and hot water piping, VAVs provided with piping packages and control valves
- Install new electric water heater
- Install 4' x 8' architectural wall between OA and EA louvers
- MC to install duct and pipe insulation with labels on new duct and piping
- Install (2) new louvers on building exterior



CGAM Product Report

General specifications table for the CGAM chiller, including Chiller Model, Elevation, Nominal Tonnage, IPLV, Voltage, Refrigerant, Number of Compressors, and Agency Listing.



Evaporator specifications table, including Evaporator Application, Fluid Type, Fouling Factor, Fluid Concentration, Flow switch set point, and Fluid Freeze Point.

Condenser specifications table, including Unit application and Total Number of Fans.

Pump Package specifications table, including Pump type and Available head pressure at water connection.

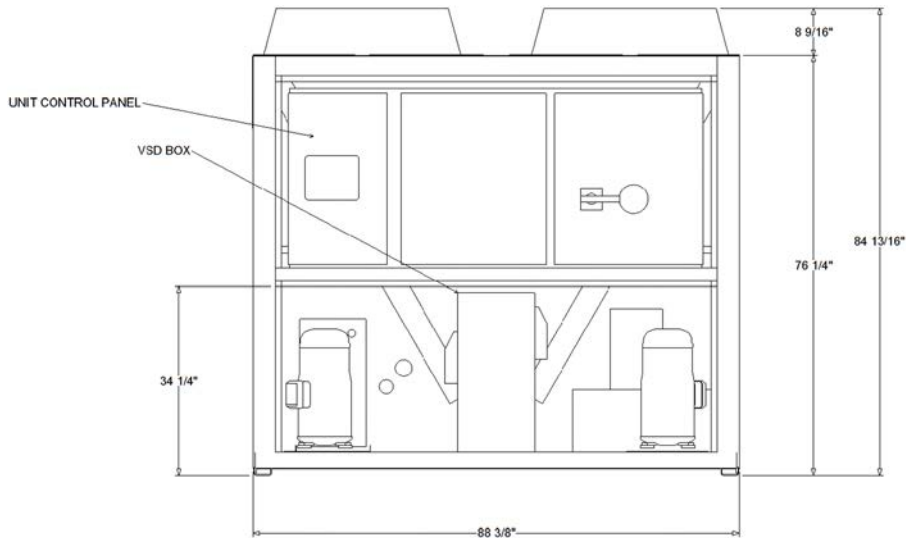
Electrical Information table, including Unit Voltage, Unit Hertz, Compressor Starter, Incoming Line Connection Type, MCA, Single point power MCA, RLA, and RLA - compressor ratings.

Thermal Battery Cooling table, including Ice build refrigeration capacity, Ice build cooling efficiency, Ice build total power, Ice build entering fluid evap, Ice build leaving fluid evap, Ice build flow evap, Ice build fluid pressure drop evap, Ice build ambient, Ice melt refrigeration capacity, Ice melt cooling efficiency, Ice melt total power, Ice melt entering fluid evap, Ice melt leaving fluid evap, Ice melt flow evap, Ice melt fluid pressure drop evap, and Ice melt ambient.

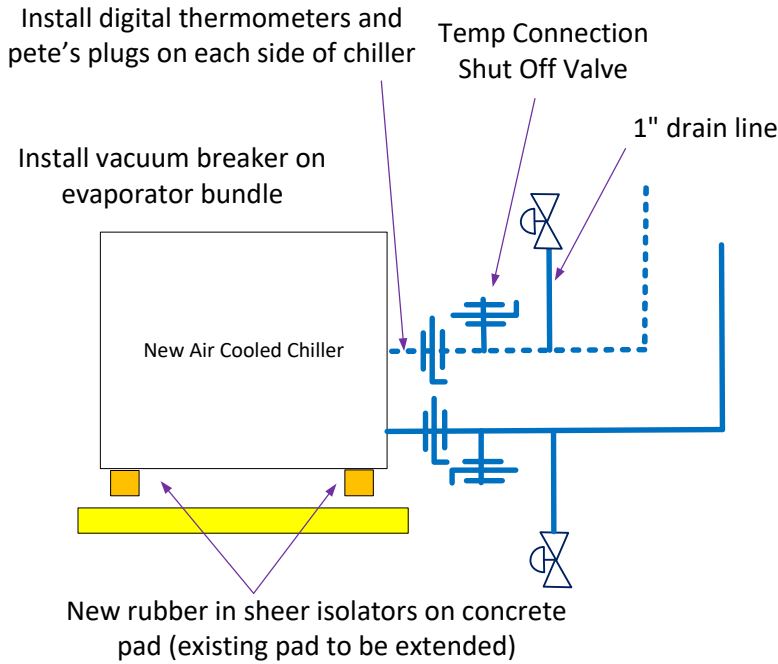
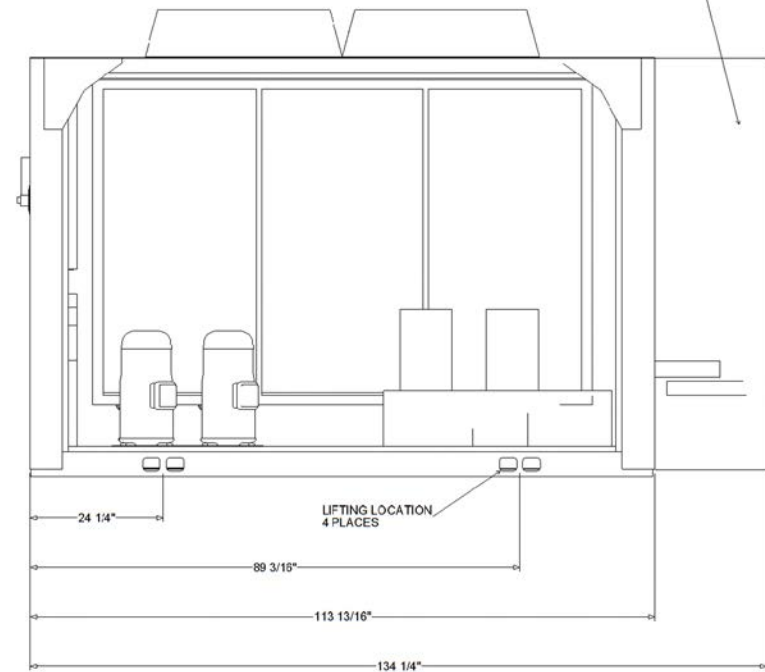
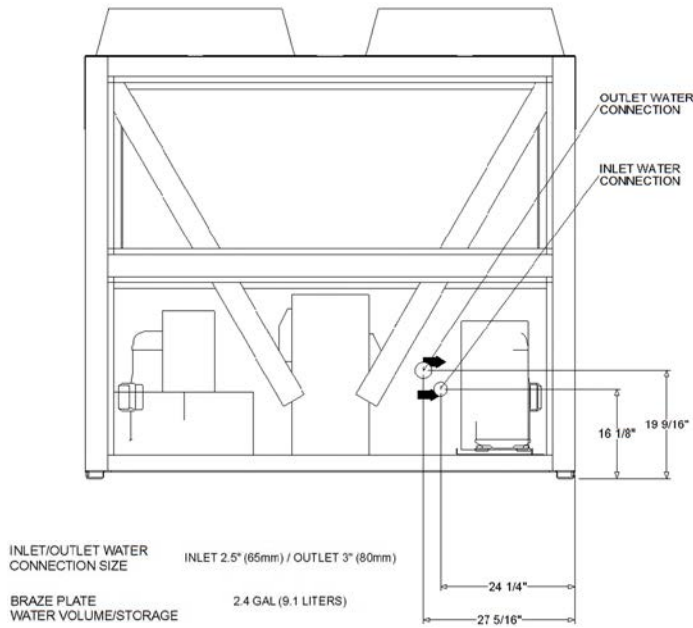
Physical Information table, including Dimensions (Length, Width, Height) and Weights (Operating weight, Shipping weight).

Tag Data - Air-Cooled Scroll (Qty: 1) table, including Item, Tag(s), Qty, Description, and Model Number.

Product Data - Air-Cooled Scroll
Item: A1 Qty: 1 Tag(s): CGAM-1
Air-Cooled Scroll Packaged Chiller
Startup Included - Trane Service must start equipment for warranty to be honored
40 nominal tons
Factory Assigned
60 hertz
208 volt 3 phases
Extra efficiency/performance
Refrigerant Charge R-454B
With factory installed freeze protection
Refrigerant isolation valves (discharge valve)
ETL Listed to US/Canadian Safety Standard
ASHRAE 90.1/CSA C743 - 2019 Compliance
AHRI certified
Factory installed flow switch - set point 15 cm/sec
Phase Reversal Protection
Ice Making with Interface
Grooved pipe connection
Factory insulation 0.75"
Performance based on propylene glycol
Wide Ambient
Lanced aluminum fins
Across the line starter/direct on line
Single point connection main line unit power-ancillary items require other power
Circuit breaker
Enclosure Type UL 60335 Rated for Outdoor Applications
No Wireless Options
Dual high head pump
Pump flow ctrl by var speed drive
With buffer storage tank
Default A short circuit rating
Elastomeric isolators
With water strainer factory installed
Super quiet
Architectural louvered panels
Year 2-5 parts warranty whole unit
1st year labor warranty
1st year refrigerant warranty
2-5th year refrigerant warranty
2-5th year labor warranty whole unit

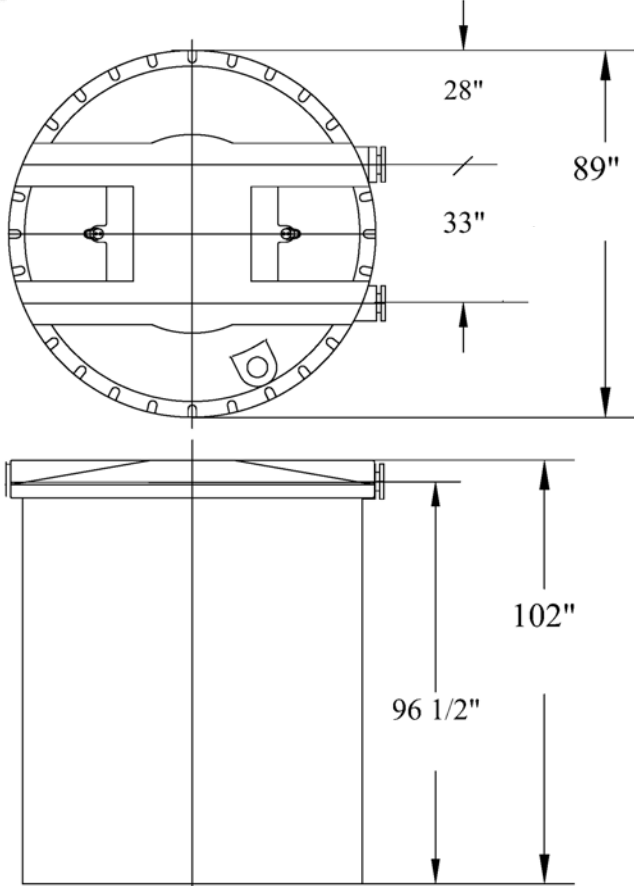


SIDES AND TOP OF BUFFER TANK REMOVED FOR CLARITY



CHILLER DETAIL

Ice Build/Comfort Cooling table with Performance, Ice Build, and Ice Melt columns, including Refrigeration Capacity, Cooling Efficiency, Total Power, IPLV/NPLV, Total Compressor Power, Total Fan Power, Leaving Fluid Evap, Entering Fluid Evap, Evap. Flow Rate, Min Flow Rate, Evap. Pressure Drop, Evap + Strainer Pressure Drop, Pressure Drop at Min Flow, and Ambient Temperature.



Revision table with columns for Rev, Date, and Description.

Tag Data - Performance Climate Changer (CSAA) (Qty: 1)

Item	Tag(s)	Qty	Description	Model Number
A1	24000	1	Performance Climate Changer (CSAA)	CSAA050UA

Product Data - Performance Climate Changer (CSAA)

Item: A1 Qty: 1 Tag(s): 24000

Unit level options

Indoor unit
Unit size 50
6in. integral base frame
UL listed unit
Single metal handle - ganged latches
150.626 Total unit length
Field Provided (mtrs, lights, controls)
No hurricane certification

Controls and VFD/starter

Variable volume control system
Symbio
Front
Supply fan VFD per fan
Symbio Module x 1
Symbio Module x 1

Warranty

Extended warranty
Parts warranty - 2nd-5th year additional
1st year labor warranty
Labor warranty 2nd thru 5th year

Air mixing section (Pos #1)

Air mixing section
Mixing box w/filter
Door- right side
Back damper - parallel blade
Front full face opening
Top damper - parallel blade
2in. filter frame
Pleated media (Field Installed)
MERV 13

Coil section (Pos #2)

Horizontal coil
Medium large
Door- right side
Stainless steel drain pan
Right side - drain connection
Right side - coil supply
Unit coil height
Cooling coil
Chilled water
Type "W" coil
8 rows
114 Coil fins per foot
Aluminum fins
Prima flo H (Hi efficient)
.020" (0.508 mm) copper tubes
5/8in. tube diameter (15.875 mm)
Galvanized steel coil casing
No turbulators
2 1/2in. Flanged 65.0CV 98 psig valve - direct ship to jobsite by vendor (Field Installed)
Coil connections - Standard

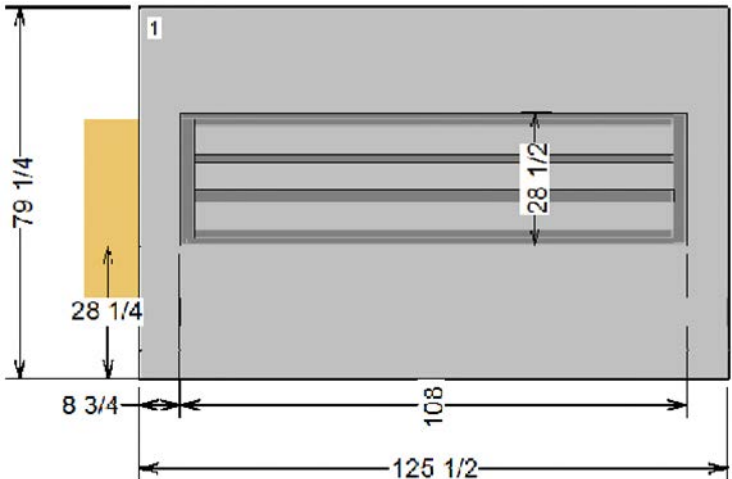
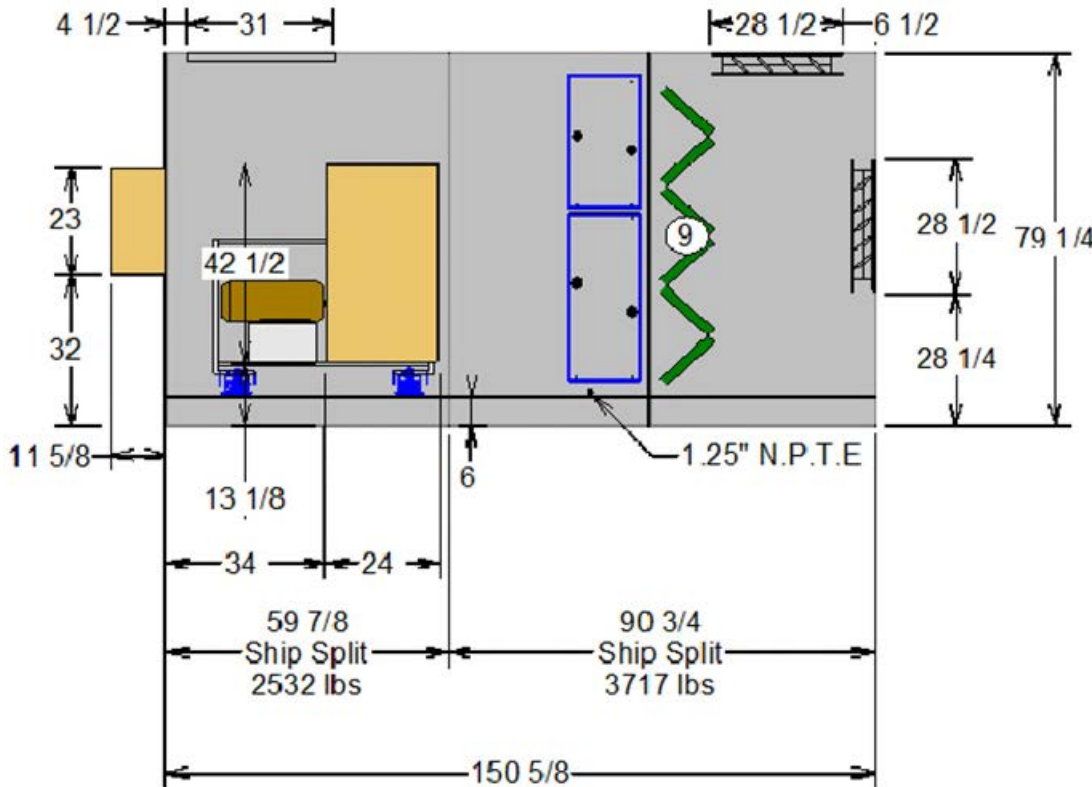
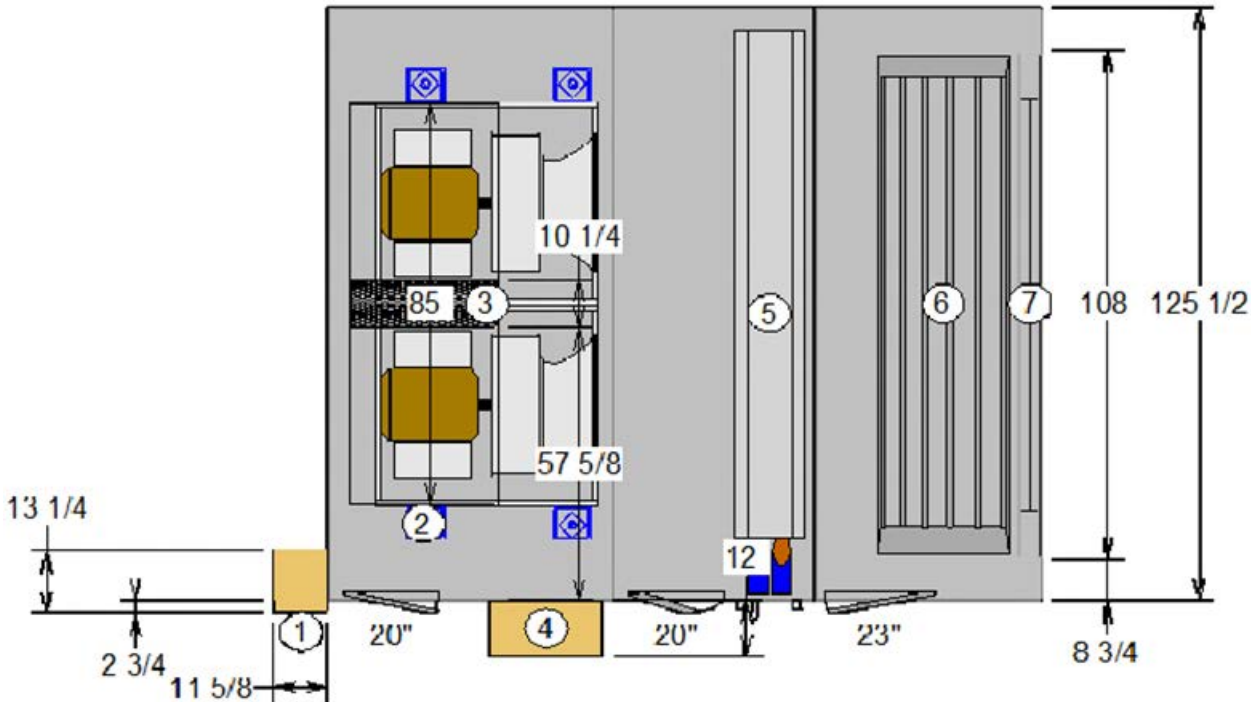
Fan section (Pos #3)

Fan section
Supply fan
Door- right side
Outward swing
27in. dd plenum, 80% width, H press
Higher efficiency
2 Fan quantity
Plenum fan
Right side drive
NEMA premium compliant ODP
Voltage 200-208/3
NEMA motor hps only
20 max applied hp
1800 RPM
Inverter balance with shaft grounding
Top rectangular discharge
Standard transmitter flow meter
Motor wiring conduit
VFD per fan
Gen 1 fan

- 1 External unit controller
Front
- 2 Opening top
85 x 31
- 3 Plenum fan - 27in. dd
plenum, 80% width, H
press Supply fan 20 hp
200-208/3
- 4 External VFD RH
- 5 Cooling coil - 8 Rows
Coil type 5/8" Shipping
Coil, General (W)
- 6 Damper top-parallel blade
108 x 28.5
- 7 Damper back-parallel
blade
28.5 x 108
- 8 1.25" N.P.T.E
- 9 Angled filters -

Doors

20 width x 69 height
20 width x 61 height
23 width x 69 height



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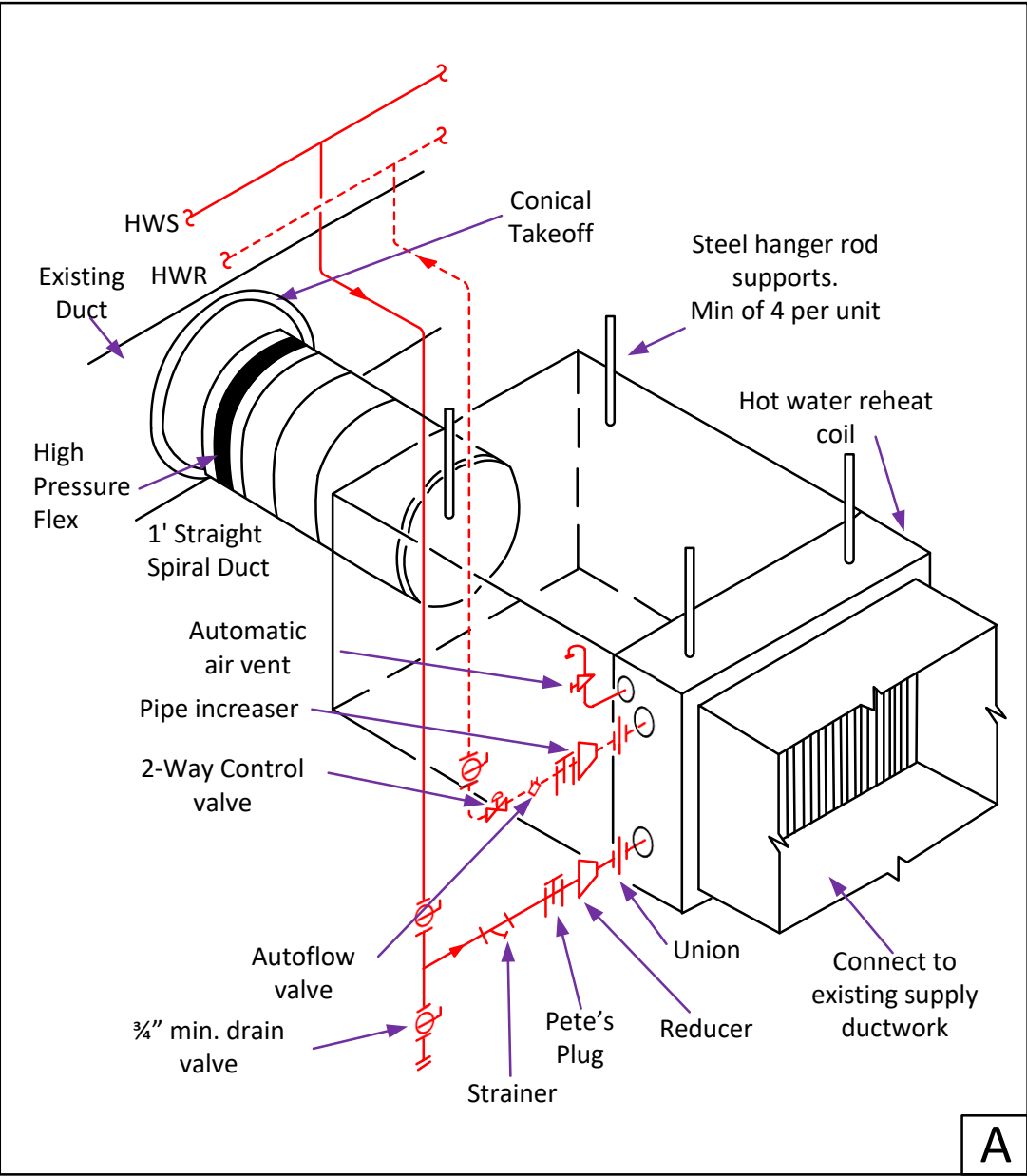
EQUIPMENT - AHU

M-4

VAV EQUIPMENT SCHEDULE

TAG	AREA SERVED	CLG CFM		HTG CFM		LOCAL HEAT MIN	MODEL NUMBER	SIZE	SERVED BY	BUILDING CONTROLLER	NOTES
		MAX	MIN	MAX	MIN						
VAV - 01	Report Processing 205 & Communications 234	2800	420	1820	1820	1820	VCWF	14"	AHU-01	SC - 01	
VAV - 02	Conf. 206, Police Chief 208, Offices 209, 210, 211, 239	2800	420	1820	1820	1820	VCWF	14"	AHU-01	SC - 01	
VAV - 03	General Office 212, Interview 214, 215, Juvenile Detention 216, 217	2800	420	1820	1820	1820	VCWF	14"	AHU-01	SC - 01	
VAV - 04	Comm. Supervisor 233, Records 232, Analyst 231, Library 229	2800	420	1820	1820	1820	VCWF	14"	AHU-01	SC - 01	
VAV - 05	Roll Call 225, Team Commander 220, 221, 222	3600	540	2340	2340	2340	VCWF	16"	AHU-01	SC - 01	
VAV - 06	Evidence Storage 115	2000	300	1300	1300	1300	VCWF	12"	AHU-01	SC - 01	
VAV - 07	Physical Fitness Training 113	1700	255	1105	1105	1105	VCWF	12"	AHU-01	SC - 01	
VAV - 08	Women's Locker 109 & Men's Locker 104	1600	240	1040	1040	1040	VCWF	12"	AHU-01	SC - 01	
VAV - 09	Corridor 117 & Staff Lounge 103	2000	300	1300	1300	1300	VCWF	12"	AHU-01	SC - 01	
VAV - 10	Booking Room 127 & Cells	2000	300	1300	1300	1300	VCWF	12"	AHU-01	SC - 01	

****FOR ALL VAVS: TRANE IS PROVIDING 18" HOSE
KITS, AUTOFLOW, SUPPLY BALL VALVE W/ PT
PORT, RETURN BALL VALVE W/ PT PORT,
STRAINER W/BDV, & CONTROL VALVE****



Tag Data - Variable Air Volume Single Duct Terminal Units (Qty: 10)

Item	Tag(s)	Qty	Description	Model Number
A1	VAV-03	1	Variable Air Volume Single Duct Terminal	VCWF 14-- *M0SY73B**0*1L0W0000000**0355
A2	VAV-05	1	Variable Air Volume Single Duct Terminal	VCWF 16-- *M0SY73B**0*1L0W0000000**0355
A3	VAV-01	1	Variable Air Volume Single Duct Terminal	VCWF 14-- *M0SY73B**0*1L0W0000000**0355
A4	VAV-02	1	Variable Air Volume Single Duct Terminal	VCWF 14-- *M0SY73B**0*1L0W0000000**0355
A5	VAV-04	1	Variable Air Volume Single Duct Terminal	VCWF 14-- *M0SY73B**0*1L0W0000000**0355
A6	VAV-09	1	Variable Air Volume Single Duct Terminal	VCWF 12-- *M0SY73B**0*1L0W0000000**0355
A7	VAV-06	1	Variable Air Volume Single Duct Terminal	VCWF 12-- *M0SY73B**0*1L0W0000000**0355
A8	VAV-07	1	Variable Air Volume Single Duct Terminal	VCWF 12-- *M0SY73B**0*1L0W0000000**0355
A9	VAV-10	1	Variable Air Volume Single Duct Terminal	VCWF 12-- *M0SY73B**0*1L0W0000000**0355
A10	VAV-08	1	Variable Air Volume Single Duct Terminal	VCWF 12-- *M0SY73B**0*1L0W0000000**0355

Product Data - Variable Air Volume Single Duct Terminal Units
All Units

- Space Temperature Modulating Reheat
- United States
- Single duct with hot water heat
- Matte faced insulation - 1" (25 mm)
- SY210 DDC-Basic (Water heat- Modulating)
- MSTP Connection
- Standard actuator
- Same side coil connections and control connections
- Air - Fi Wireless Communication Module
- Duct temperature sensor -factory mounted
- Attenuator only
- Standard Air Leakage
- 1R HW
- No water valve
- No piping package
- None
- Disconnect switch
- Trane Air-Fi - WCS-SD (display) (Field Installed)
- Year 2-5 parts warranty whole unit
- 1st year labor warranty whole unit
- 2nd-5th year labor warranty whole unit

Item: A1, A3, A4, A5 Qty: 4 Tag(s): VAV-03, VAV-01, VAV-02, VAV-04
14" inlet size, 3000 cfm (356mm inlet, 1416 l/s)

Item: A2 Qty: 1 Tag(s): VAV-05
16" inlet size, 4000 cfm (406mm inlet, 1888 l/s)

Item: A6, A7, A8, A9, A10 Qty: 5 Tag(s): VAV-09, VAV-06, VAV-07, VAV-10, VAV-08
12" inlet size, 2000 cfm (305mm inlet, 944 l/s)

Rev	Date	Description
1	7-24-24	35% Design

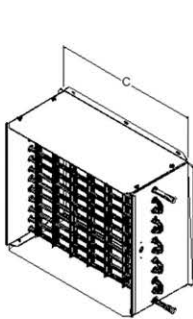
Performance Data - Variable Air Volume Single Duct Terminal Units

Tags	VAV-03, VAV-01, VAV-02, VAV-04	VAV-05	VAV-09, VAV-06, VAV-10	VAV-07	VAV-08
UCM/UC400 address	0	0	0	0	0
WCI Address	11	11	11	11	11
Design cooling airflow (cfm)	2800	3600	2000	1700	1600
Min cooling airflow (cfm)	420	540	300	255	240
Valve heating airflow (cfm)	1820	2340	1300	1105	1040
Cooling inlet diameter	14"	16"	12"	12"	12"
Cooling inlet velocity (ft/min)	2619	2578	2546	2165	2037
APD @ cooling airflow (in H2O)	0.330	0.370	0.350	0.270	0.250
Elevation (ft)	0.00	0.00	0.00	0.00	0.00
Operating weight (lb)	84.1	89.5	68.7	68.7	68.7
Run acoustics?	No	No	No	No	No
Hot water valves?	None	None	None	None	None
Main Unit Weight (lb)	46.0	51.0	38.0	38.0	38.0
Plenum Weight (lb)	0.0	0.0	0.0	0.0	0.0
Attenuator Weight (lb)	25.7	24.7	21.7	21.7	21.7
FIPP Weight (lb)	0.0	0.0	0.0	0.0	0.0
Dual-Wall Weight (lb)	0.0	0.0	0.0	0.0	0.0
Weight 6 (lb)	0.0	0.0	0.0	0.0	0.0
Coil Weight (lb)	12.4	13.8	9.0	9.0	9.0
EH Weight (lb)	0.0	0.0	0.0	0.0	0.0
Replication Run	285	285	285	285	285
Trane Select Assist Version Number	285	285	285	285	285
Coil heating capacity (MBh)	58.58	74.92	41.63	37.74	36.40
Room heat loss (MBh)	32.93	41.95	23.31	22.17	21.75
Room heating setpoint (F)	68.00	68.00	68.00	68.00	68.00
Primary EDB (F)	55.00	55.00	55.00	55.00	55.00
Unit LAT (F)	84.68	84.52	84.52	86.49	87.27
Heating ent fluid temp (F)	180.00	180.00	180.00	180.00	180.00
Heating lvg fluid temp (F)	150.00	150.00	150.00	150.00	150.00
Heating delta T (F)	30.00	30.00	30.00	30.00	30.00
Fluid type	Water	Water	Water	Water	Water
Heating Cv (Number)	1.95	2.50	1.39	1.26	1.21
Heating flow rate (gpm)	3.90	4.99	2.77	2.51	2.42
Coil fluid PD (ft H2O)	3.87	6.67	4.01	3.36	3.14
Electric heater kW (kW)	0.00	0.00	0.00	0.00	0.00
Main coil tube wall	Standard	Standard	Standard	Standard	Standard
Main coil rows	1 ROW	1 ROW	1 ROW	1 ROW	1 ROW

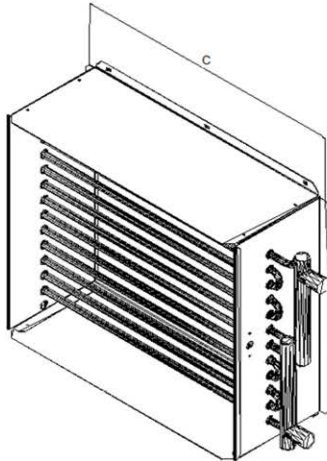
Accessory - Variable Air Volume Single Duct Terminal Units

Item: A1 - A10 Qty: 10 Tag(s): VAV-03, VAV-05, VAV-01, VAV-02, VAV-04, VAV-09, VAV-06, VAV-07, VAV-10, VAV-08

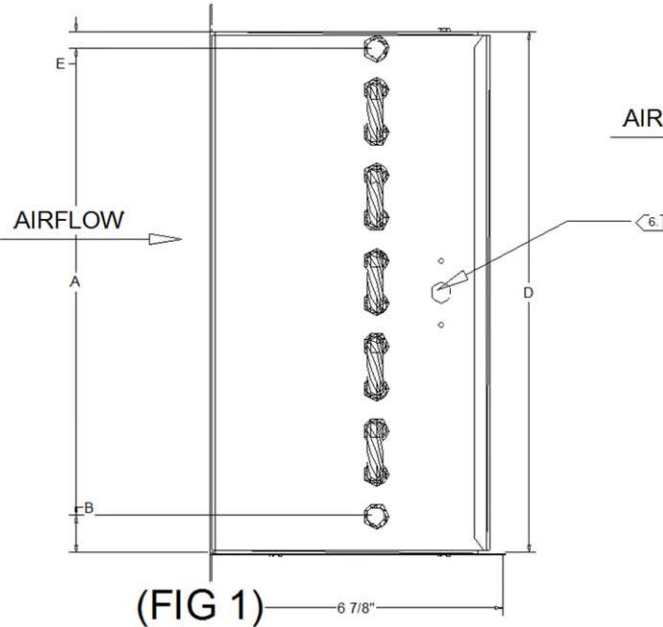
COIL INFORMATION FOR 1 ROW COIL ASSY									
VALV	CFM	LITERS per SECOND	COIL CONNECTION	SEE (FIG 1)	A	B	C	D	E
04	225	106	3/8" [10mm] O.D.		7" [178mm]	7/8" [22mm]	10 1/4" [261mm]	8 1/4" [210mm]	3/8" [10mm]
05	350	165	3/8" [10mm] O.D.		7" [178mm]	7/8" [22mm]	10 1/4" [261mm]	8 1/4" [210mm]	3/8" [10mm]
06	500	236	3/8" [10mm] O.D.		7" [178mm]	7/8" [22mm]	10 1/4" [261mm]	8 1/4" [210mm]	3/8" [10mm]
08	900	425	3/8" [10mm] O.D.		9" [229mm]	7/8" [23mm]	11 1/4" [286mm]	10 1/4" [261mm]	3/8" [10mm]
10	1400	661	3/8" [10mm] O.D.	SEE (FIG 2)	11" [279mm]	7/8" [23mm]	14 1/4" [362mm]	12 1/4" [312mm]	3/8" [10mm]
12	2000	994	7/8" [22mm] O.D.		9 3/4" [247mm]	2 1/2" [64mm]	17 1/4" [439mm]	14 1/4" [363mm]	2 1/32" [52mm]
14	3000	1416	7/8" [22mm] O.D.		15 3/4" [399mm]	1 1/2" [39mm]	19 1/4" [489mm]	18 1/4" [464mm]	1 1/32" [26mm]
16	4000	1888	7/8" [22mm] O.D.		15 3/4" [399mm]	1 1/2" [39mm]	23 1/4" [591mm]	18 1/4" [464mm]	1 1/32" [26mm]
16x24	8000	3776	7/8" [22mm] O.D.		16 3/4" [425mm]	1 1/2" [39mm]	27 1/4" [693mm]	18 1/4" [464mm]	1 1/32" [26mm]



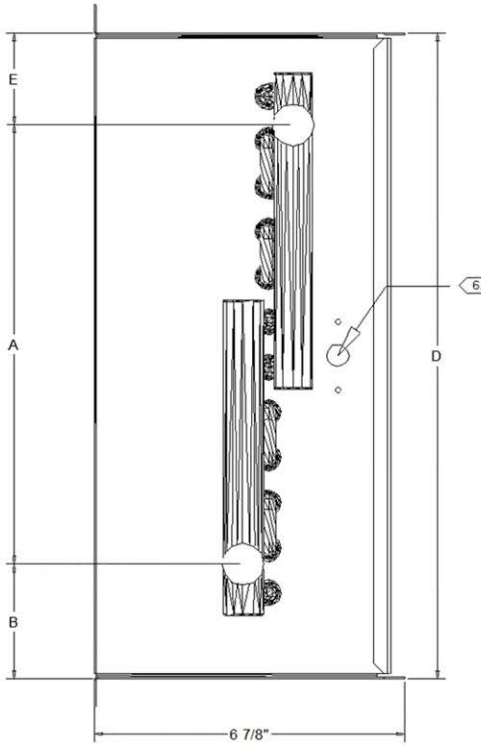
(FIG 1)



(FIG 2)



(FIG 1)



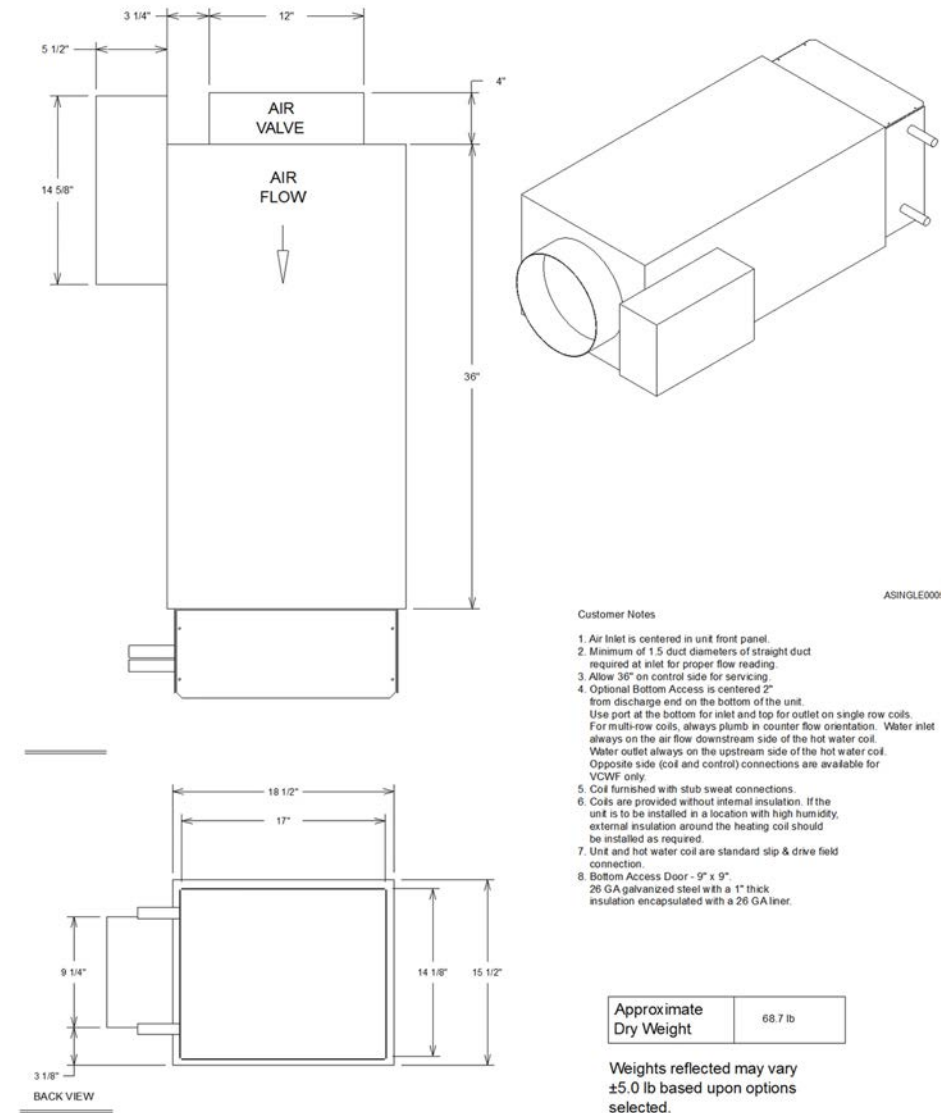
(FIG 2)

CUSTOMER NOTES:

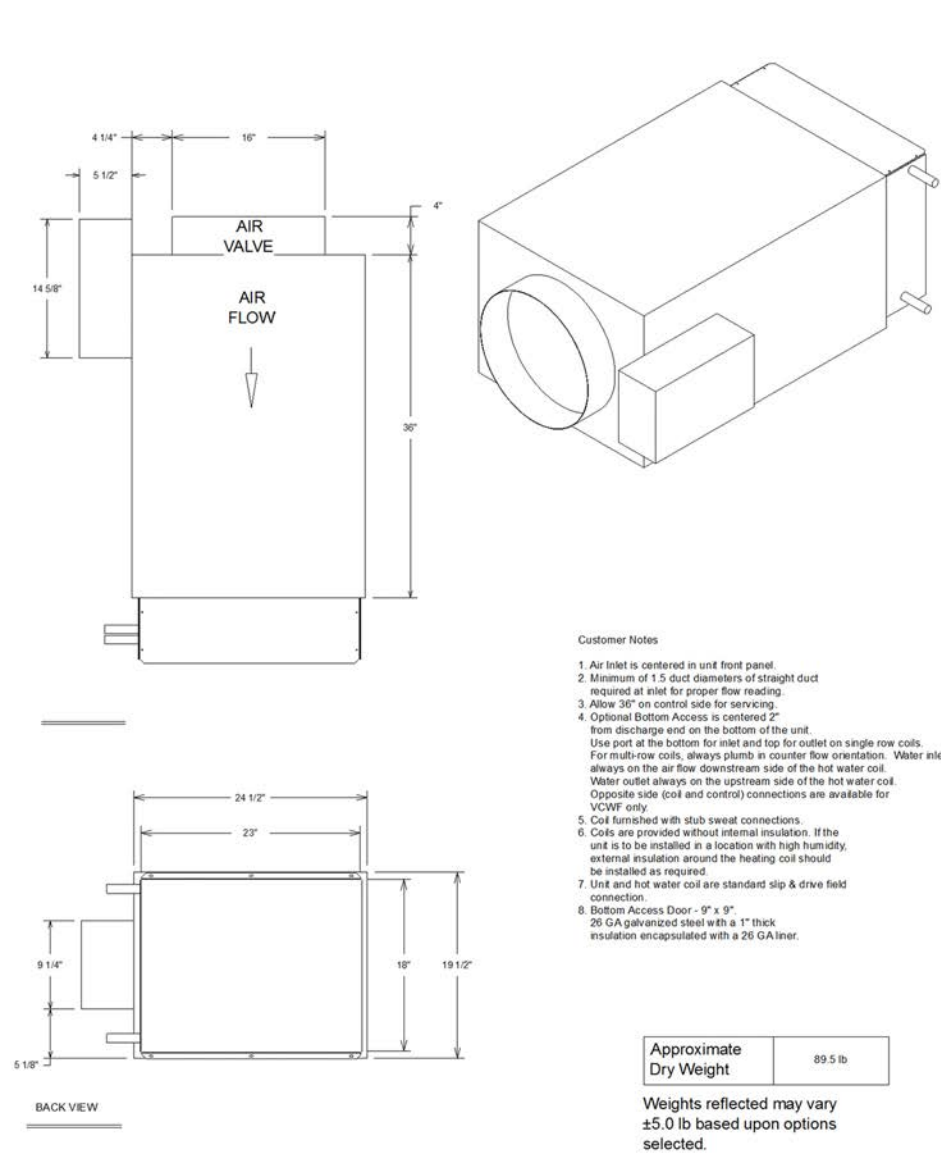
1. Location of coil connections is determined by facing air stream. L.H. Coil connections shown, R.H. opposite.
2. Coil furnished with stub sweat connections.
3. Use port at bottom for inlet and port at top for outlet on single row coils. Coil is rotated to achieve opposite hand connection.
4. Coil height and width is dependent upon unit height and width.
5. Top and bottom coil panel removable for access.
6. OPTIONAL: Factory installed Duct Temperature Sensor.

Rev	Date	Description
1	7-24-24	35% Design

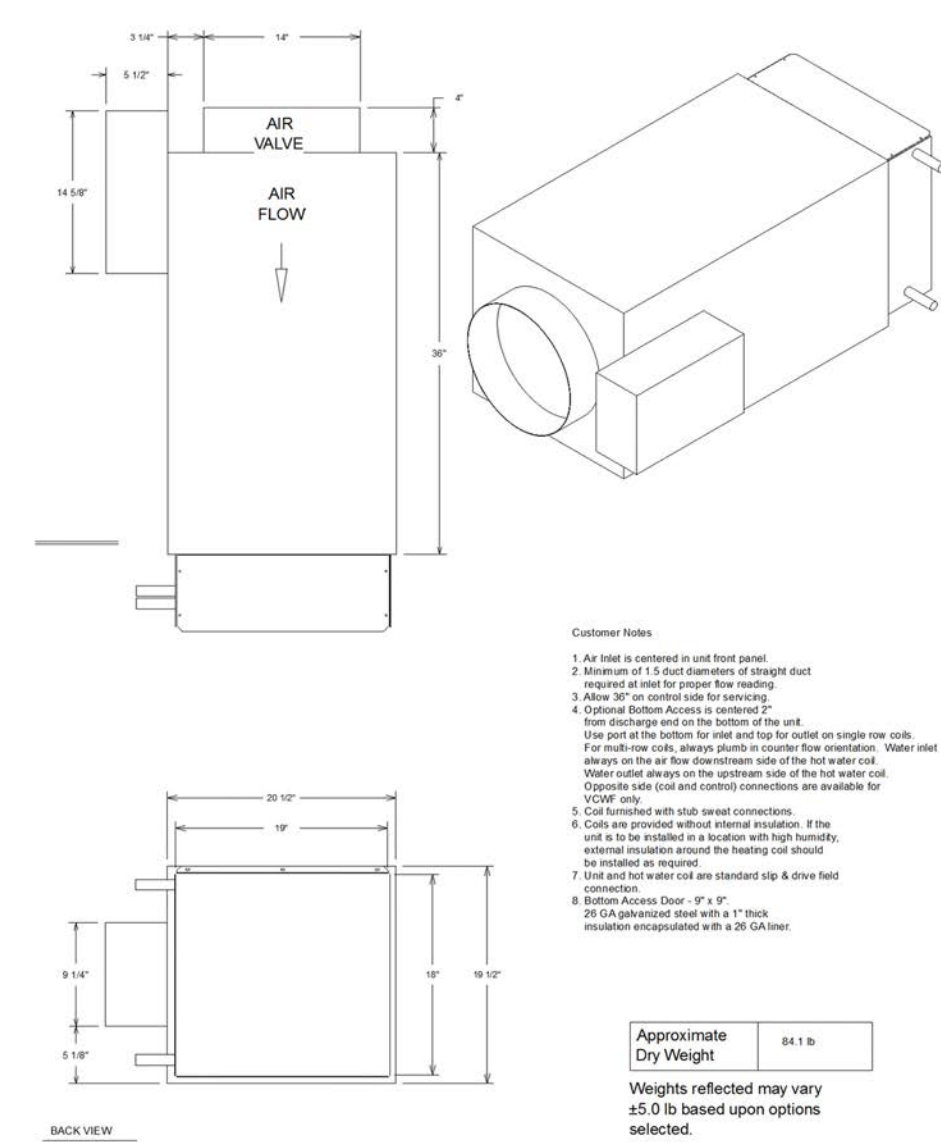
Dimensional Drawings - Variable Air Volume Single Duct Terminal Units
Item: A6 - A10 Qty: 5 Tag(s): VAV-09, VAV-06, VAV-07, VAV-10, VAV-08



Dimensional Drawings - Variable Air Volume Single Duct Terminal Units
Item: A2 Qty: 1 Tag(s): VAV-05



Dimensional Drawings - Variable Air Volume Single Duct Terminal Units
Item: A1, A3 - A5 Qty: 4 Tag(s): VAV-03, VAV-01, VAV-02, VAV-04



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Rev	Date	Description
1	7-24-24	35% Design

EQUIPMENT – VAV

M-7



STANDARD HI-POWER
ELECTRIC WATER HEATER

Submittal Sheet

HPI-Sub-03

STANDARD HI-POWER IMMERSION THERMOSTAT COMMERCIAL ELECTRIC WATER HEATERS

Job Name: _____

Location: _____

Engineer: _____

Agent/Wholesaler: _____

Contractor: _____

Model No. _____

Voltage/Phase _____

Recovery Rate in GPH _____ @ _____ °F Rise

Equipment Tag(s): _____

Gal. Cap. _____

kW _____

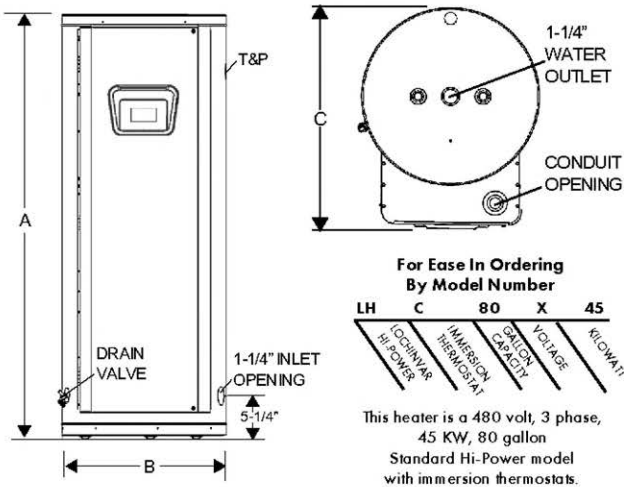
NOTES:

Standard Features

- Meets ASHRAE Energy Efficiency Standards
- 300 psi Test Pressure, 150 psi Working Pressure
- Tank Saver Anode
- Plated Incoloy, Low Watt Density Element
- Energy Cut-Off
- Internal Fusing when Current Exceeds 48 Amps
- 180° Operation Approved
- ASME Temperature and Pressure Relief Valve
- Non-CFC Foam Insulation
- Hinged Access Door
- - 3 Year Limited Tank Warranty
- - 1 Year Limited Parts Warranty



DIMENSIONS & SPECIFICATIONS



AMPERAGE TABLE							
KW	Single Phase				Three Phase		
	208V	240V	277V	480V	208V	240V	480V
12.3	59	51	44	26	34	30	15
13.5	64.9	56.3	48.7	28.1	37.5	32.5	16.2
15	72.1	62.5	54.2	31.3	41.6	36.1	18.0
18	86.5	75.0	65.0	37.5	50.0	43.3	21.7
24	115.4	100.0	86.6	50.0	66.6	57.7	28.9
27	129.8	112.5	97.5	56.3	74.9	65	32.5
30	144.2	125.0	108.3	62.5	83.3	72.2	36.1
36	173.1	150.0	130.0	75.0	99.9	86.6	43.3
40.5	194.7	168.8	146.2	84.4	112.4	97.4	48.7
45	216.3	187.5	162.5	93.8	124.9	108.3	54.1
54	N/A	225.0	194.9	112.5	149.9	129.9	65.0
VOLTAGE SCHEDULE							
T - 208V / 1 or 3 PH		W - 277V / 1 PH		Z - 415V / 1 or 3 PH			
P - 240V / 1 or 3 PH		X - 480V / 1 or 3 PH					

Model Number	KW	Gallon Capacity	GPH @ 100°F Rise	Number of Elements	A	B	C	Shipping Weight
○ LHC-50 (X)12	12.3	50	49	3	55-3/4"	21-3/4"	27"	265
○ LHC-50 (X)13	13.5	50	55	3	55-3/4"	21-3/4"	27"	265
○ LHC-50 (X)15	15	50	61	3	55-3/4"	21-3/4"	27"	265
○ LHC-50 (X)18	18	50	74	3**	55-3/4"	21-3/4"	27"	265
○ LHC-50 (X)24	24	50	98	6	55-3/4"	21-3/4"	27"	265
○ LHC-50 (X)27	27	50	111	6	55-3/4"	21-3/4"	27"	265
○ LHC-50 (X)30	30	50	123	6	55-3/4"	21-3/4"	27"	265
○ LHC-50 (X)36	36	50	148	6	55-3/4"	21-3/4"	27"	265
○ LHC-50 (X)40	40.5	50	166	9	55-3/4"	21-3/4"	27"	265
○ LHC-50 (X)45	45	50	194	9	55-3/4"	21-3/4"	27"	265
○ LHC-50 (X)54	54	50	221	9	55-3/4"	21-3/4"	27"	265
○ LHC-80 (X)12	12.3	80	49	3	60-1/4"	25-1/2"	31"	280
○ LHC-80 (X)13	13.5	80	55	3	60-1/4"	25-1/2"	31"	280
○ LHC-80 (X)15	15	80	61	3	60-1/4"	25-1/2"	31"	280
○ LHC-80 (X)18	18	80	74	3**	60-1/4"	25-1/2"	31"	280
○ LHC-80 (X)24	24	80	98	6	60-1/4"	25-1/2"	31"	280
○ LHC-80 (X)27	27	80	111	6	60-1/4"	25-1/2"	31"	280
○ LHC-80 (X)30	30	80	123	6	60-1/4"	25-1/2"	31"	280
○ LHC-80 (X)36	36	80	148	6***	60-1/4"	25-1/2"	31"	280
○ LHC-80 (X)40	40.5	80	166	9	60-1/4"	25-1/2"	31"	280
○ LHC-80 (X)45	45	80	194	9	60-1/4"	25-1/2"	31"	280
○ LHC-80 (X)54	54	80	221	9	60-1/4"	25-1/2"	31"	280
○ LHC-119 (X)12	12.3	120	49	3	62-1/4"	29-1/2"	35"	390
○ LHC-119 (X)13	13.5	120	55	3	62-1/4"	29-1/2"	35"	390
○ LHC-119 (X)15	15	120	61	3	62-1/4"	29-1/2"	35"	390
○ LHC-119 (X)18	18	120	74	3**	62-1/4"	29-1/2"	35"	390
○ LHC-119 (X)24	24	120	98	6	62-1/4"	29-1/2"	35"	390
○ LHC-119 (X)27	27	120	111	6	62-1/4"	29-1/2"	35"	390
✓ LHC-119 (X)30	30	120	123	6	62-1/4"	29-1/2"	35"	390
○ LHC-119 (X)36	36	120	148	6***	62-1/4"	29-1/2"	35"	390
○ LHC-119 (X)40	40.5	120	166	9	62-1/4"	29-1/2"	35"	390
○ LHC-119 (X)45	45	120	194	9	62-1/4"	29-1/2"	35"	390
○ LHC-119 (X)54	54	120	221	9	62-1/4"	29-1/2"	35"	390

208V models are configured with 6 elements, *208V models are configured with 9 elements, Note: 208V - 54KW models are factory assembled only. They are not field convertible.



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Rev	Date	Description
1	7-24-24	35% Design

EQUIPMENT - WATER
HEATER

M-8

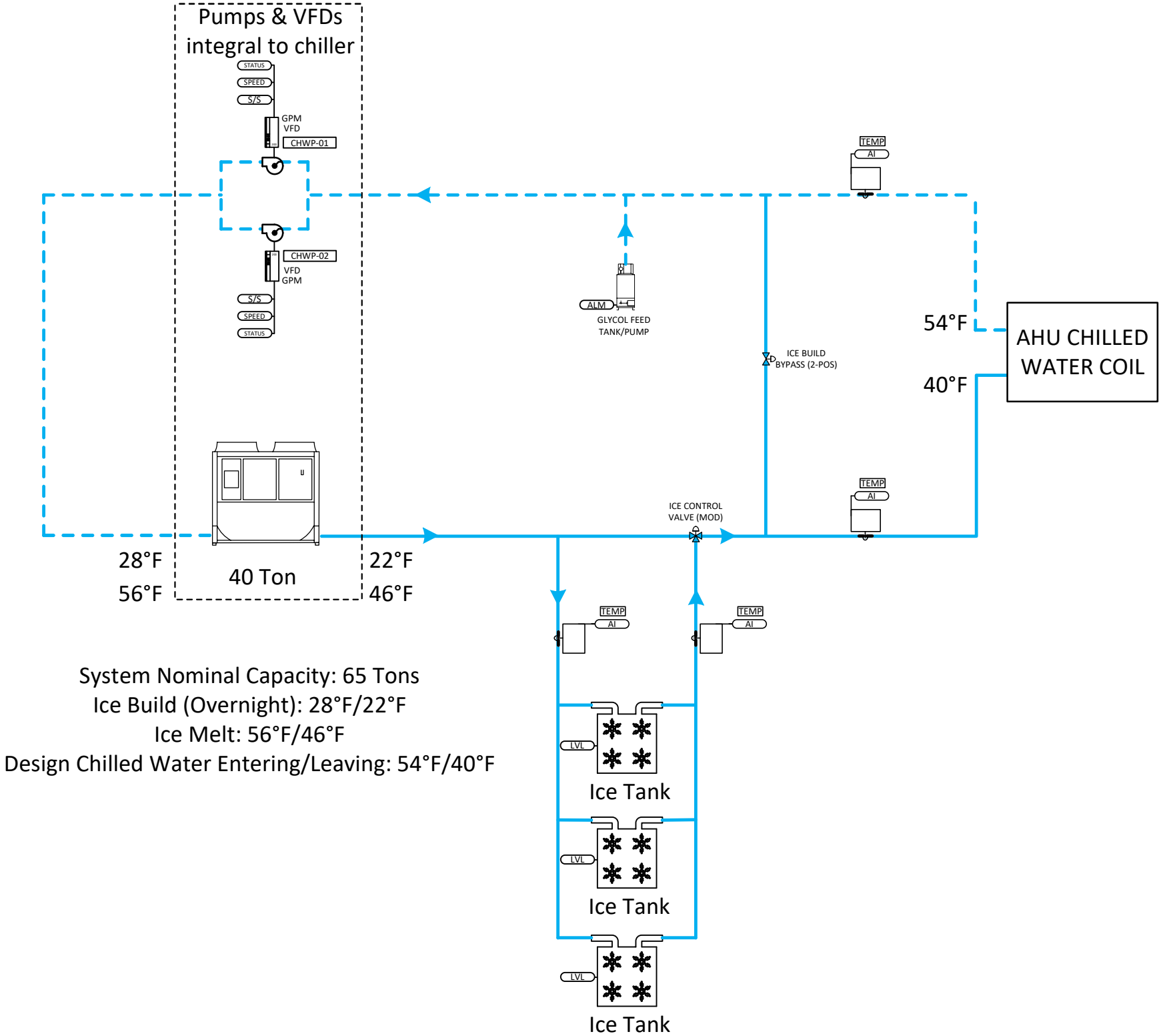
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Rev	Date	Description
1	7-24-24	35% Design

CHILLED WATER & ICE
FLOW DIAGRAM



GENERAL NOTES:

WORK SHALL BE IN COMPLETE ACCORDANCE WITH ALL CODES, RULES, OR ORDINANCES AND REGULATIONS OF ALL AUTHORITIES, BODIES, ASSOCIATIONS, GOVERNMENTS, ETC. HAVING PROPER AND/OR LEGAL JURISDICTION.

DRAWING PLANS, SCHEMATICS, AND DIAGRAMS INDICATE GENERAL LOCATION AND ARRANGEMENT OF PIPING AND DUCT SYSTEMS.

ALL SUBS AS PART OF CONTRACT TO VERIFY FIELD CONDITIONS PRIOR TO COMMENCING WORK.

ALL SUBS TO CONDUCT TESTS AND INSPECTIONS AS REQUIRED TO ASSURE PROPER INSTALLATION AND OPERATION OF SYSTEMS.

INSTALL SYSTEMS ABOVE ACCESSIBLE CEILINGS TO ALLOW SUFFICIENT SPACE FOR CEILING PANEL REMOVAL.

INSTALL PIPING AND DUCTWORK TO ALLOW APPLICATION OF INSULATION AND SERVICING OF VALVES AND EQUIPMENT.

PENETRATIONS THROUGH FLOOR, WALL AND ROOF STRUCTURE SHALL BE WATERTIGHT AND WITH AN APPROVED FIRE STOPPING MATERIAL.

ALL EQUIPMENT TO HAVE U.L. OR ETL LISTING.

SELECT SYSTEM COMPONENTS WITH PRESSURE RATING EQUAL TO OR GREATER THAN SYSTEM OPERATING PRESSURE.

ALL DIMENSIONS ARE IN INCHES UNLESS OTHERWISE NOTED.

PIPING GENERAL NOTES:

INSTALL PIPING INDICATED TO BE EXPOSED AND PIPING IN EQUIPMENT ROOMS AND SERVICE AREAS AT RIGHT ANGLES OR PARALLEL TO BUILDING WALLS. DIAGONAL RUNS ARE PROHIBITED UNLESS SPECIFICALLY INDICATED OTHERWISE.

INSTALL PIPING FREE OF SAGS AND BENDS.

INSTALL DRAINS, CONSISTING OF 3/4" BALL VALVE, HOSE ADAPTER AND CAP, AT LOW POINTS IN PIPING SYSTEM MAINS AND ELSEWHERE AS REQUIRED FOR SYSTEM DRAINAGE.

INSTALL VENTS, CONSISTING OF 3/4" BALL VALVE, HOSE ADAPTER AND CAP, AT HIGH POINTS IN PIPING SYSTEM AND ELSEWHERE AS REQUIRED FOR PROPER SYSTEM AIR VENTING.

SUBJECT PIPING SYSTEM TO HYDROSTATIC TEST PRESSURE THAT IS NOT LESS THAN 1.5 TIMES THE SYSTEM'S WORKING PRESSURE. TEST PRESSURE SHALL NOT EXCEED MAXIMUM PRESSURE FOR ANY VESSEL, PUMP, VALVE, OR OTHER COMPONENT IN SYSTEM UNDER TEST.

INSTALL ISOLATION VALVES AT ANY PIPING SYSTEM PRIOR TO LEAVING THE MECHANICAL ROOM.

PROVIDE A DIELECTRIC CONNECTION WHEN JOINING TWO DISSIMILAR METALS.

PIPE & FITTINGS SCHEDULE					
SERVICE	SIZE	PIPE	FITTINGS	BRANCH CONNECTIONS	VALVES (EQUAL TO...)
CHILLED WATER, HOT WATER	2" & SMALLER	SCH 40 BLACK STEEL	BLACK, CLASS 150, MALLEABLE IRON THREADED OR PROPRESS	REDUCING TEES, OKAY TO BUSH ONE SIZE REDUCTION	SHUT OFF – APOLLO 77C A SERIES 600 PSIG FULL PORT BALL VALVE; RETURN BRANCH VALVE = B&G OR TACO 300 PSI CIRCUIT SETTER; TERMINAL UNIT BALANCING VALVE - AUTOMATIC FLOW CONTROL DEVICE
	2-1/2" & LARGER	SCH 40 BLACK STEEL	STANDARD WEIGHT CARBON STEEL WELD FITTINGS OR GROOVED FITTINGS	TOL/WOL UP TO TWO PIPE BELOW MAIN PIPE DIAMETER. REDUCING TEES FOR ONE OR TWO PIPE SIZE REDUCTIONS	NIBCO LD-3010, LUG TYPE, 250 PSIG DUCTILE IRON BUTTERFLY VALVE W/ EDPM DISC COATING & 10 POSITION LOCKING LEVER, GEAR OPERATOR ON 8" & ABOVE; RETURN BRANCH VALVE = B&G OR TACO 300 PSI CIRCUIT SETTER; TERMINAL UNIT BALANCING VALVE = AUTOMATIC FLOW CONTROL VALVE

PIPE INSULATION SCHEDULE				
SERVICE	LOCATION	SIZE	MATERIAL	THICKNESS
CHILLED WATER	INDOOR	1/2" TO 1-1/2"	ASJ FIBERGLASS	1-1/2"
		2" TO 8"	ASJ FIBERGLASS	2"
		LARGER THAN 8"	ASJ FIBERGLASS	2-1/2"
	OUTDOOR	1/2" TO 1-1/2"	ASJ FIBERGLASS W/PVC JACKET	1-1/2"
		2" AND LARGER	ASJ FIBERGLASS W/PVC JACKET	2"
		LARGER THAN 8"	ASJ FIBERGLASS W/PVC JACKET	2-1/2"
HOT WATER (141F - 200F)	INDOOR	1/2" TO 1-1/4"	ASJ FIBERGLASS	1-1/2"
		1-1/2" TO 10"	ASJ FIBERGLASS	2"

DUCTWORK NOTES:

ALL DUCTWORK TO BE GALVANIZED SHEET METAL.

SHEET METAL FABRICATION AND INSTALLATION SHALL MEET OR EXCEED THE STANDARDS SET IN THE DUCT MANUAL FOR VENTILATING AND AIR CONDITIONING SYSTEMS AS PUBLISHED BY SMACNA.

FLEXIBLE DUCT SHALL NOT EXCEED 5 FEET IN LENGTH AND SHALL BE THERMAFLEX TYPE MKE R6 INSULATED OR TYPE SLD UN-INSULATED.

ALL DUCT COVERING AND LINING SHALL HAVE A FLAME SPREAD RATING NOT TO EXCEED TWENTY-FIVE (25) AND A SMOKE SPREAD RATING NOT MORE THAN FIFTY (50).

DUCT SIZES SHOWN ARE FINISHED METAL SIZES.

OUTSIDE AIR INTAKES SHALL BE INSTALLED A MINIMUM OF 10'-0" AWAY FROM ALL FLUES, VENTS, TOILET EXHAUST AND ALL OTHER SOURCES OF CONTAMINATION.

ALL FLUES TO EXTEND 3'-0" ABOVE ROOF.

INSTALL ACCESS DOORS AS SHOWN ON DRAWINGS; 12"X12" OR 12" ROUND UNLESS NOTED OTHERWISE.

DUCT CONSTRUCTION SCHEDULE				
DESCRIPTION	PRESSURE CLASS	SEAL CLASS	SEAM TYPE	CONNECTION TYPE
LOW PRESSURE RECTANGULAR EXHAUST, RETURN AND OUTSIDE AIR	+/-2"	A	DUCT = SNAPLOCK/PITTSBURGH FITTINGS = PITTSBURGH	PER SMACNA
LOW PRESSURE ROUND EXHAUST, RETURN AND OUTSIDE AIR	+/-2"	A	DUCT = SNAPLOCK FITTINGS = PITTSBURGH	PER SMACNA
MEDIUM PRESSURE RECTANGULAR SUPPLY	+4"	A	DUCT = SNAPLOCK/PITTSBURGH FITTINGS = PITTSBURGH	PER SMACNA
MEDIUM PRESSURE ROUND SUPPLY	+4"	A	SPIRAL	PER SMACNA
RECTANGULAR SUPPLY (DOWNSTREAM OF VAV BOXES)	+2"	A	DUCT = SNAPLOCK/PITTSBURGH FITTINGS = PITTSBURGH	PER SMACNA
ROUND SUPPLY (DOWNSTREAM OF VAV BOXES)	+1"	A	DUCT = SNAPLOCK FITTINGS = PITTSBURGH	PER SMACNA

DUCT INSULATION SCHEDULE	
DESCRIPTION	INSULATION TYPE
WHEN LOCATED INDOORS IN AN UNCONDITIONED SPACE SUPPLY, RETURN, OUTSIDE AIR	1" X 1-1/2 LB MINERAL FIBER DUCT LINER + 1-1/2" X 3/4 LB FIBERGLASS DUCT WRAP
WHEN LOCATED INDOORS IN AN UNCONDITIONED SPACE SUPPLY, RETURN, OUTSIDE AIR	1-1/2" X 1-1/2 LB MINERAL FIBER DUCT LINER
WHEN LOCATED INDOORS IN AN UNCONDITIONED SPACE SUPPLY, RETURN, OUTSIDE AIR	2" X 1 LB FIBERGLASS DUCT WRAP
WHEN LOCATED INDOORS IN AN UNCONDITIONED SPACE SUPPLY, RETURN, OUTSIDE AIR	1-1/2" X 3 LB MINERAL FIBER INSULATION BOARD
WHEN LOCATED INDOORS IN AN UNCONDITIONED SPACE EXHAUST	UNINSULATED
WHEN LOCATED INDOORS IN AN INDIRECTLY CONDITIONED SPACE (I.e., A RA PLENUM) SUPPLY AIR	1-1/2" X 3/4 LB FIBERGLASS DUCT WRAP
WHEN LOCATED INDOORS IN AN INDIRECTLY CONDITIONED SPACE (I.e., A RA PLENUM) SUPPLY AIR	1" X 1-1/2 LB MINERAL FIBER DUCT LINER
WHEN LOCATED INDOORS IN AN INDIRECTLY CONDITIONED SPACE (I.e., A RA PLENUM) OUTSIDE AIR	1" X 1-1/2 LB MINERAL FIBER DUCT LINER + 1-1/2" X 3/4 LB FIBERGLASS DUCT WRAP
WHEN LOCATED INDOORS IN AN INDIRECTLY CONDITIONED SPACE (I.e., A RA PLENUM) OUTSIDE AIR	2" X 1 LB FIBERGLASS DUCT WRAP
WHEN LOCATED INDOORS IN AN INDIRECTLY CONDITIONED SPACE (I.e., A RA PLENUM) RETURN AND EXHAUST AIR	UNINSULATED
WHEN EXPOSED IN A CONDITIONED SPACE SUPPLY, RETURN AND EXHAUST AIR	UNINSULATED
WHEN EXPOSED IN A CONDITIONED SPACE OUTSIDE AIR	1" X 1-1/2 LB MINERAL FIBER DUCT LINER + 1-1/2" X 3/4 LB FIBERGLASS DUCT WRAP
WHEN EXPOSED IN A CONDITIONED SPACE OUTSIDE AIR	2" X 1 LB FIBERGLASS DUCT WRAP

ELECTRICAL GENERAL NOTES:

THE DRAWINGS ARE DIAGRAMMATIC AND ARE NOT INTENDED TO INCLUDE EVERY DETAIL OF REQUIRED CONSTRUCTION, EQUIPMENT, & MATERIALS. PROVIDE ALL MATERIALS AND WORK NOT SPECIFICALLY MENTIONED OR SHOWN ON THE DRAWINGS BUT WHICH ARE NECESSARY TO FULLY COMPLETE THE WORK.

REVIEW THE CONTRACT DOCUMENTS OF OTHER DIVISIONS & COORDINATE ELECTRICAL DIVISION WORK WITH THE WORK OF OTHER DISCIPLINES TO AVOID CONFLICTS & INTERFERENCE.

UPON COMPLETION OF THE WORK REQUIRED UNDER THIS CONTRACT, PROVIDE TYPED UPDATED DIRECTORY WITHIN DOOR OF EACH AFFECTED PANELBOARD. LEAVE "SPARE" BREAKERS IN "OFF" POSITION.

IN AREAS HAVING FINISHED CEILINGS, LOCATE CEILING-MOUNTED ELECTRICAL DEVICES & FIXTURES ACCORDING TO ARCHITECTURAL REFLECTED CEILING PLAN. DO NOT INSTALL CEILING-MOUNTED SMOKE DETECTORS WITHIN 4 FEET OF HVAC SUPPLY DIFFUSERS.

IN ELECTRICAL & MECHANICAL EQUIPMENT SPACES, COORDINATE EXACT LOCATIONS OF LIGHTING FIXTURES WITH CONDUIT BANKS, DUCTWORK, PIPING, STRUCTURE, SUPPORTS, & OTHER OBSTRUCTIONS. LOCATE FIXTURES SUCH THAT DIALS, GAUGES, METERS, ETC. ARE PROPERLY ILLUMINATED.

ALL WIRING METHODS IN THIS PROJECT WILL BE AT MINIMUM PER THE NEC EDITION ACCEPTABLE TO THE AHJ.

MAINTAIN INTEGRITY OF VERTICAL FIRE RESISTIVE ASSEMBLIES CLASSIFIED AS SMOKE & FIRE/SMOKE PARTITIONS WITHOUT AFFECTING RATING PROVIDED THAT 1) SUCH OPENINGS OCCUR ON ONLY ONE SIDE IN EACH FRAMING SPACE, 2) AREA OF OPENINGS DOES NOT EXCEED 16 SQUARE INCHES, & 3) BOXES ON OPPOSITE FACES OF PARTITION ARE SEPARATED HORIZONTALLY BY NOT LESS THAN 23 INCHES. COMPLETELY FILL WITH APPROVED FIRE RESISTIVE COMPOUND ALL CLEARANCES BETWEEN OUTLET BOXES & DRYWALL. BUILD WALL AROUND BOXES HAVING AREA GREATER THAN 16 SQUARE INCHES.

DO NOT INSTALL OUTLET BOXES BACK-TO-BACK IN NON-RATED PARTITIONS. OFFSET & SEAL SIMILAR TO REQUIREMENTS FOR RATED PARTITIONS TO MINIMIZE SOUND TRANSMISSION.

COORDINATE ROUTING OF ALL LARGE CONDUITS (2" DIA. AND LARGER) AND PULL BOX LOCATION WITH MECHANICAL PIPING AND DUCTWORK PRIOR TO INSTALLATION TO AVOID CONFLICTS AND TO GUARANTEE REQUIRED CLEARANCE AND ACCESSIBILITY OF ELECTRICAL AND MECHANICAL SYSTEMS.

DO NOT ATTACH DISCONNECTS AND STARTERS NOT PROVIDED WITH EQUIPMENT DIRECTLY TO THE EQUIPMENT. MOUNT AND SUPPORT SEPARATELY. COORDINATE REQUIRED LOCATION WITH OTHER TRADES PRIOR TO INSTALLATION.

PROVIDE APPROPRIATE PULL WIRE IN EACH EMPTY SYSTEMS CONDUIT INCLUDED IN THIS PROJECT

INCLUDE GREEN-INSULATED GROUNDING CONDUCTOR SIZED PER 2020-NEC TABLE 250-122 WITH ALL BRANCH CIRCUIT CONDUCTORS SERVING LIGHTING FIXTURES, RECEPTACLES, MECHANICAL, OR OTHER DEVICES INSTALLED AT OR BELOW 8'-0"

MATCH A.I.C. RATINGS AND OTHER CHARACTERISTICS OF EXISTING DEVICES IN PANELBOARD WHEN ADDING BREAKERS TO EXISTING PANELBOARDS.

FURNISH AND INSTALL NEW NEMA 3R JUNCTION BOX FOR CHILLER WHERE NECESSARY

FURNISH AND INSTALL NEW CONDUIT TO MATCH EXISTING PIPE AND WIRING SIZING FROM NEW

JUNCTION BOX TO NEW DISCONNECT AND FINAL CONNECTIONS TO NEW EQUIPMENT

INSTALL TRANE PROVIDED WCI FOR THE WIRELESS CONTROLS. PROVIDE 24V POWER TO THE WCI

RECONNECT ANY AND ALL FIRE ALARM /LIFE SAFETY SYSTEMS TO NEW AHU

Responsibility Matrix

- Trane to provide the following equipment
 - 40 Ton Air-Cooled Chiller with pump package & buffer tank
 - (3) Ice Storage Tanks
 - (1) Air Handler with CHW coil and VFD on supply fan
 - (10) VAV Boxes with HW Reheat and wireless zone sensors
 - Piping packages for VAV boxes
 - Trane SC+ Controller with enclosure
 - UC600 Ice Plant Controller with sensors
 - 24V Power source (PSH-500)
 - (2) Exterior Louvers
 - (1) Non-perforated Architectural Wall
 - (1) Exhaust/relief damper with actuator
 - (1) Electric water heater
 - Equipment to be delivered to Bulldog for local release to jobsite

- Trane to subcontract the following disciplines
 - Mechanical
 - Electrical
 - General/Concrete
 - Test and Balance
 - Crane

- Mechanical Sub Scope of Work
 - Dumpster & haul away for mechanical demolition
 - Demolition of CUs, AHUs, DX Pipe, ductwork & water heater in Mech room
 - Flush existing HW piping
 - Install AHU, CHW piping, and ductwork
 - Install VAV boxes, HW piping, and ductwork
 - Insulation for new piping and ductwork
 - Install Chiller & Ice Storage tanks
 - F&I glycol solution
 - F&I glycol feed system
 - Install electric water heater
 - Install exhaust/relief damper
 - Start up assist

- Electrical Sub Scope of Work
 - Demo make safe all demolished equipment
 - F&I new fuses and power feed for new AHU
 - F&I new fuses and power feed for new Chiller
 - F&I new fuses and power feed for new Electric Water Heater
 - F&I CB & power feed for glycol feed system
 - Install Tracer SC+ & UC600 Ice Plant controls with enclosure, sensors, & control devices including valves
 - Install Air-Fi coordinators
 - Install 24V power to new VAV Boxes (PSH500)
 - Install wireless sensors
 - Install field mounted control devices for AHU

- General/Concrete Sub Scope of Work
 - Extend existing concrete pad for new AHU
 - Extend existing concrete pad for new chiller and ice tanks
 - Install new exterior louvers & architectural wall

- Test & Balance Sub Scope of Work
 - Pretest of air flows of AHUs supply, return, & outside air
 - Pretest of each zone supply air flow
 - Pretest of HW flow for each AHU
 - Post-test of AHU supply, return, outside air flows
 - Post-test and balancing of AHU & Chiller CHW flow
 - Post-test and balancing of VAV Boxes air flow



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Recreation
Administration

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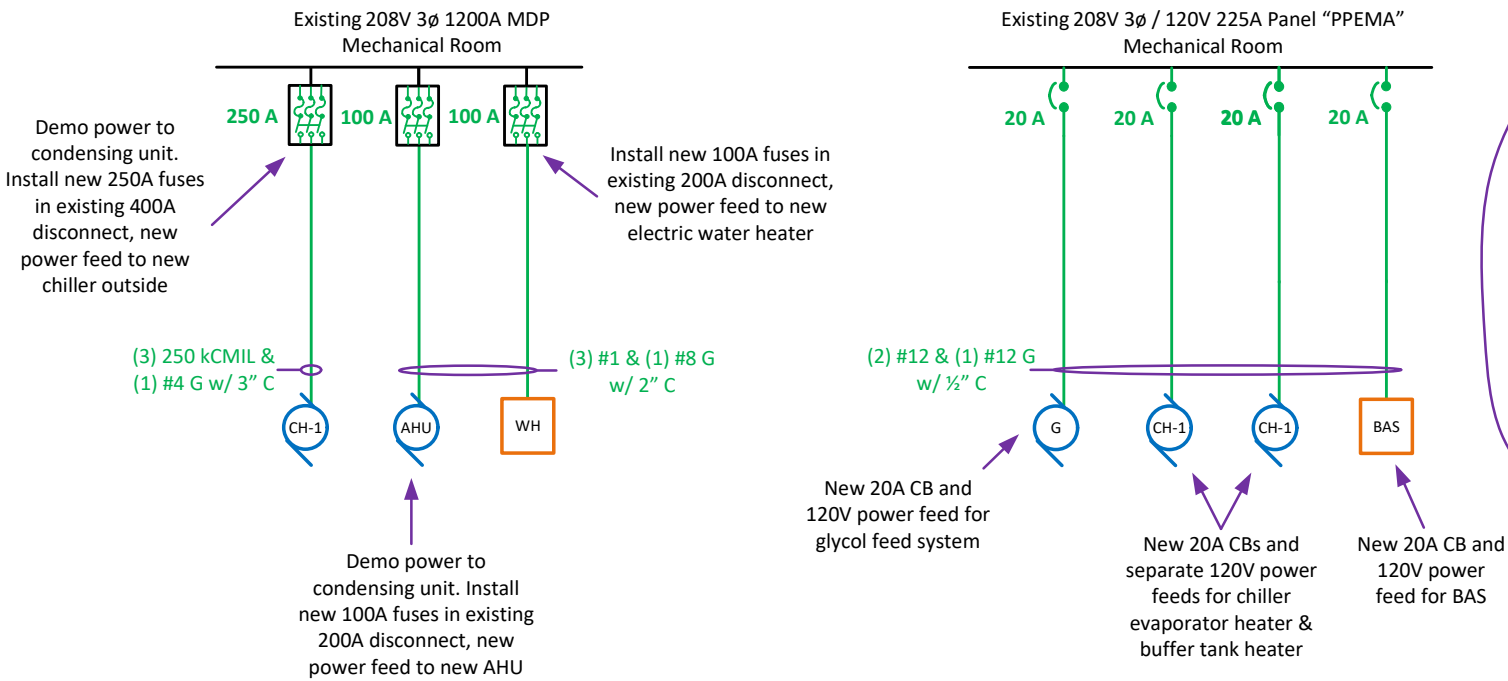
Rev	Date	Description
1	7-24-24	35% Design

NOTES & DETAILS

M-10

Single Line Electrical Diagrams

WIRE COLOR KEY
GREEN = NEW WORK
BLACK = EXISTING



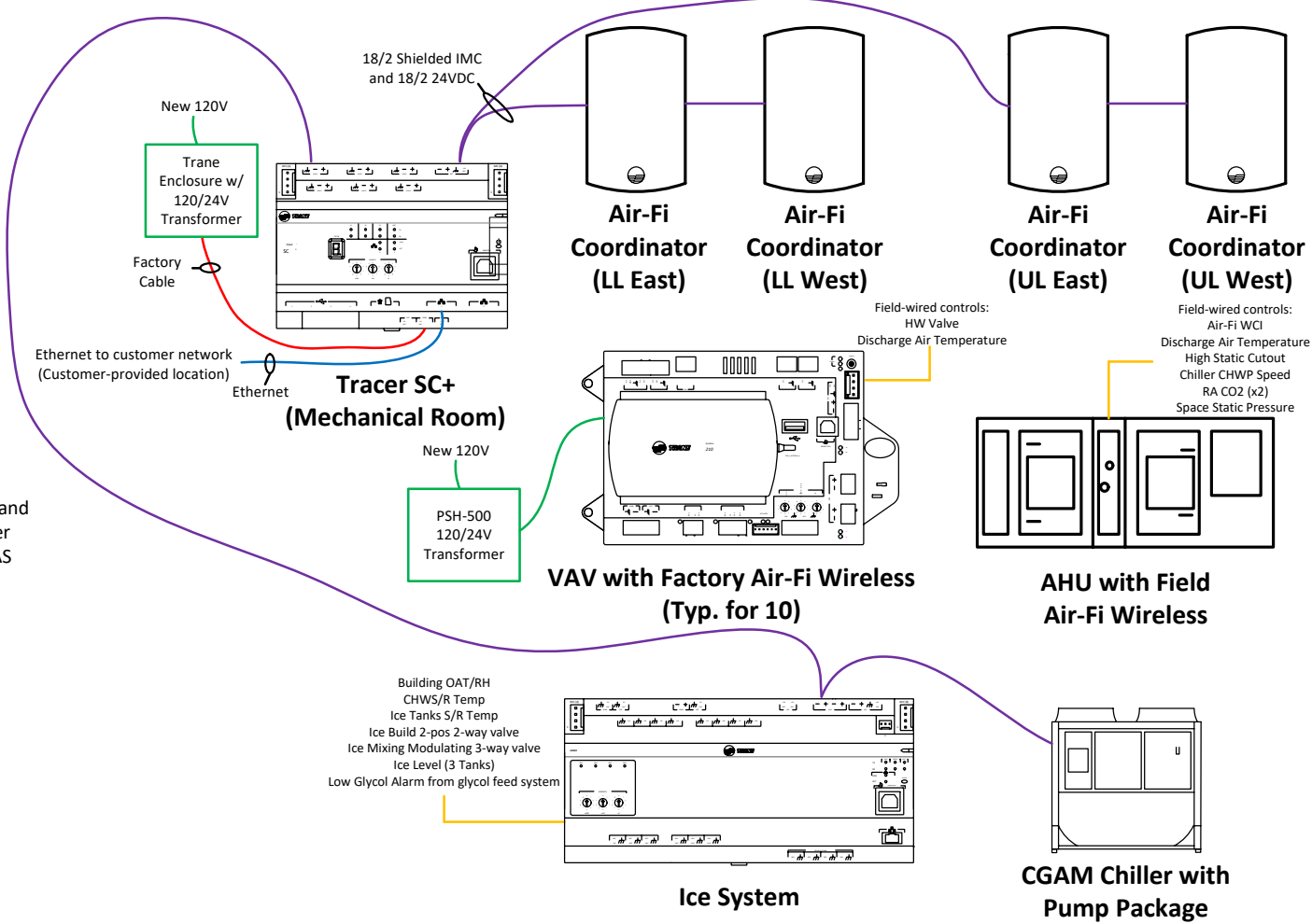
Demolition

- Demo Notes:
- Demo & make safe 208V 3Ø power at (2) condensing units
 - Demo & make safe 208V 3Ø power at (2) air handlers
 - Demo air handler controls & maintain communication link integrity
 - Existing controls front-end to remain
 - Existing water heater circ. pump to remain

Installation

- Install Notes:
- Demo make safe all demolished equipment
 - F&I new 100A fuses and power feed for new AHU
 - F&I new 250A fuses and power feed for new Chiller
 - F&I new 100A fuses and power feed for new Electric Water Heater
 - F&I 20A CB & power feed for glycol feed system
 - F&I 20A CB & power feed for BAS
 - F&I 20A CBs & power feeds for chiller evaporator heater & buffer heater
 - Install convenience outlet near chiller
 - Install Tracer SC+ & UC600 Ice Plant controls with enclosure, sensors, & control devices including valves
 - Install Air-Fi coordinators
 - Install 24V power to new VVT Boxes (PSH500)
 - Install wireless sensors
 - Install field mounted control devices for AHU

Building Automation System



AHU Cooling Coil and Chilled Water System Control:
The chilled water system will be enabled to run when the outdoor air rises above 60°F (adj.).

When the chiller evaporator pump output calls for the pump to run, the chiller pump will start at the speed that corresponds to the design flow (max speed) default (adj.) and the chilled water system setpoint will be set to 42°F (adj.) default. The pump speed will be modulated down to maintain a discharge air temperature setpoint of 55°F (adj.) on the air handler. Once the pump has reached the speed that corresponds to the chiller minimum flow (min speed), as determined by the system balancer, the chilled water system setpoint will be reset up from 42°F (adj.) to 50°F (adj.) to maintain the discharge air setpoint.

When the outdoor air falls 5°F (adj.) below the chilled water system outdoor air enable setpoint, the chiller will be disabled and the pump will continue to run until the chiller evaporator pump output no longer calls for flow.

If the pump fails to prove status within 30 seconds of a start command, a pump failure alarm will be annunciated at the BAS. When the pump proves status once again, the alarm will automatically clear and the system will return to normal operation.

If the Chiller indicates a critical alarm, an alarm will be annunciated at the BAS operator interface.

Chilled water system ice build and ice burn will follow Trane standard sequence.

BAS Controls submittal to be provided separately from Trane Controls Engineering

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SINGLE-LINE & BAS