

Sealed proposals will be received by Macomb CUSD No. 185 for the Detron Replacement Work at Macomb Junior-Senior High School.

Proposals must be delivered prior to **2:00 p.m., prevailing time, Wednesday, August 11, 2021** to:

District Administration Center
Reception Desk Macomb CUSD No. 185
323 W. Washington St., Macomb, IL 61455

Pre-Bid Meeting: **Tuesday, August 3, 2021 – 10:00 AM at Macomb Junior-Senior High School 1525 S Johnson St.** Enter at the Northwest pool/gym lobby doors.

Proposals shall be identified as a **proposal for the Dectron Replacement** on the outside of the envelope. Proposals will be opened publicly following the due time listed. Proposals may be mailed or by delivery service but time of delivery is the responsibility of the vendor, late or misdirected bids cannot be considered.

Terms of the proposal include Bid Security, Owner protective bonds, Prevailing Wage Act, Certified payroll reporting through the IDLR portal, Revised ILCS Statutes and the Illinois School Code requirements. No faxed proposals or modifications can be considered.

The Board of Education has the right to reject or accept any or all parts of all bids submitted and/or waive any or all irregularities in the bidding and to accept the lowest responsible bid that is in the best interest of Macomb District #185.

For full requirements, plans and specifications of the proposal, contact the Architect: Middleton Associates Incorporated, 1702 W. College Avenue, Suite E, Normal, Illinois 61761-2793, Phone 309/452-1271, FAX 309/454-8049. Plans and specifications may be reviewed without deposit at the office of the Architect and electronically. Interested bidders should be registered with the Architect in order to receive addendums or clarifications to the bid terms.

Bid Documents are available on line at www.middletonassociates.net. Paper copies may be printed directly from the web site. Addendums or amendments to the bid documents will be provided by email to bidders registered with the Architect and will be available online or electronically upon request. One copy of the plans and specifications, to be returned, can be provided upon request, at least six days prior to bid date.

PROJECT TITLE: Dectron Replacement
at
Macomb Junior-Senior High School

DATE OF PROPOSAL **Wednesday, August 11, 2021** TIME: **2:00 p.m. prevailing time**

LOCATION OF BID: District Administration Center
Macomb CUSD No. 185
323 W. Washington St.
Macomb, IL 61455

NAME OF FIRM _____

PROPOSAL FOR: All work single contract

A/E PROJECT NO. 2542 0220

THE BID ACKNOWLEDGES THE FOLLOWING ADDENDA:
Failure to acknowledge may cause bid rejection

NO. 1 _____, NO. 2 _____, NO. 3 _____, NO. 4 _____, NO. 5 _____

EACH BID SHALL INCLUDE:

- A. The bid forms and certifications completed and signed, (*this form may be copied.*)
- B. Bid security (*standard industry forms may be employed*)
- C. The bidder shall be aware of the need to minimize down time for the Dectron replacement work at the Junior Senior High School

BASE BID: Dectron replacement: The bidder agrees to perform all base bid work, single contract, inclusive of all trades for the sum of:

_____ Dollars
WRITTEN AMOUNT

\$ _____
NUMERICAL

ALTERNATE _____
SPACE LEFT FOR ALTERNATE IF REQUESTED BY ADDENDUM

_____ ADD/Deduct\$ _____

ANTICIPATED SCHEDULE

Anticipated Start Date _____ Anticipated completion Date _____

Downtime and date of proposed work may be considered in making the award.

VOLUNTARY ALTERNATES OR SUBSTITUTIONS

Did you offer or include any voluntary alternates or product substitution on form provided.

YES _____

NO _____

Voluntary alternates or substitutions may or may not be considered in making the award and are not required. Attach description if offered.

THE BIDDER AGREES TO:

1. Hold this bid open for forty-two (42) calendar days after bid opening date.
2. Enter into and execute a contract with Macomb CUSD No. 185 if awarded this contract.
3. Comply with the contract and bidding documents with respect to bid security, all bonds, insurance, work requirements, schedule and Bonus / Penalty Clause
4. Comply with the Contract Documents with respect to scheduling as described in the documents, noted on drawings.
5. Follow the schedule proposed in Project Schedule specification 00 3000

THE BIDDER MAKES THE FOLLOWING REPRESENTATIONS AND CERTIFICATIONS:

- A. A surety company has agreed to issue payment and performance bonds to fulfill the contracting requirements.
- B. The Bidder is not barred from contracting with any unit of state or local government as a result of violating the bid rigging or bid rotating provisions contained in 720 ILCS 5/33E.
- C. The Bidder is not barred from contracting with the State of Illinois as a result of a bribery conviction per 30 ILCS 505/10.2.
- D. All on site labor and wage compensation provided by this contractor or his subcontractors will comply with the Illinois Prevailing Wage Act (820 ILCS 130E).
- E. This proposal is made without any connection with any person making another bid for the same contract, that the School Board, other officer or any person in the employment of Macomb CUSD No. 185 is directly or indirectly interested in the bid or any portion of the profit there from, except as allowed by the Illinois Law or the Illinois School Code.
- F. I agree to provide a drug-free workplace as required by the Illinois Drug-free Workplace Act.
- H. I do hereby certify that I am either the bidder or duly authorized agent of the referenced bidder, and I am authorized to execute the certifications hereon.
- G. I certify that by submission of this proposal the bidder confirms that he is familiar with the site, existing conditions, the Bid Documents, requirements and the project schedule.

CONTRACTOR:

ACCEPTANCE BY MACOMB CUSD #185:

Firm Name: _____

Date: _____

Address: _____

Award: \$ _____

Signature: _____

Telephone: _____

Title: _____

FAX: _____

Email: _____

Date: _____

SIGNATURE:

TITLE: _____

For Corporations only

END 00 4000



1702 W. College Ave. Suite E
Normal, IL 61761-2793
p: 309.452.1271
f: 309.454.8049
www.middletonassociates.net

**MACOMB JUNIOR SENIOR HIGH SCHOOL
DECTRON REPLACEMENT
Macomb CUSD 185
1525 South Johnson Street, Macomb, IL 61455**

**PROPOSAL DUE 2:00 pm Wednesday, August 11, 2021
At the Macomb CUSD #185
District office 323 W Washington Street Macomb, IL 61455**

Proposals will be publicly opened and read at that time and location.

This proposal is to be offered as turn key design build all work necessary to replace the existing Dectron equipment. Contractor shall submit with proposal basic descriptive information on included work and any excluded work attached to his proposal to describe the design build proposal offered. Drawings and specifications provide descriptions of the minimum work to be included. Work to include clean up and refurbishing affected surrounds to original condition.

Contractor is in charge of directing the work, safety, barricades and all aspects of the means and methods of construction.

BID SECURITY – 5% as Bid Bond or certified or non-cancelable bank check payable to Macomb CUSD #185. Bid security of unsuccessful bidders will be returned after contract is satisfactorily implemented with the successful bidder.

OWNER'S PROTECTIVE BONDS – Labor and Materials and Performance bonds are required.

INSURANCE – Upon award, Contractor shall provide insurance listing the Owner, Macomb CUSD #185 and the A/E, Middleton Associates as named insureds or additional insureds.

- A. Workman's Comp, statutory
- B. General Liability, personal injury not less than \$1,000,000/occurrence \$2,000,000 aggregate.
- C. Property damage, Broad Form \$1,000,000 occurrence/ \$2,000,000 aggregate.
- D. Business and completed operations one year and \$1,000,000
- E. Auto rented and owned, \$1,000,000 occurrence / \$1,000,000 per person bodily injury.
- F. Limits can be met with umbrella coverage.

PROPOSALS

- A. All proposals shall be signed (live signatures, no copies of signatures accepted) by persons fully and duly authorized to sign same. See attached Bid Form.

- B. Any bid signed by a person other than set forth above shall enclose with his bid proposal evidence of Power of Attorney.
- C. No faxed proposals or modifications.
- D. By submitting a proposal as design build the contractor recognizes that each proposal will be considered on the merits of its content as well as cost. While the intent is to accept the lowest bid meeting the criteria, voluntary alternates may be considered for award if found to be advantageous and in the best interest to the District

AWARD OR REJECTION

- A. Although it is the intention of the Owner to accept the lowest qualified bid the Owner specifically reserves the right to waive all formalities and/or informalities, to reject any and all bids and/or accept the bid that, is determined to be in the best interest of Macomb CUSD #185
 - 1. Best interest will be determined by the content of the proposal to the Owner in the event of an award, after reviewing included and any excluded work.

COMMENCEMENT AND COMPLETION OF CONSTRUCTION

- A. Contractor shall not commence work until the agreement has been executed by both the Owner and Contractor and Insurance Certificate and Owner's Protective Bonds have been issued and accepted by the Owner and Architect.
 - 1. On site work shall not commence until new equipment and installation materials and labor is available.
 - 2. Schedule all work for completion as soon as possible, coordinate schedule with the owner.
 - a. Coordinate crane day(s) with the owner, so they can make schedule adjustments to allow lifting overhead.
 - 3. Once started, work continuously through completion. Do not start demolition until delivery of new equipment is arranged for minimum down time and minimum time roof is opened up.
 - a. Coordinate subcontractors for smooth integration of installation for minimum down time.
 - i. Ventilating Work
 - ii. Piping Work
 - iii. Electrical work
 - iv. Control work
 - v. Insulation work
 - vi. Accessory equipment work
 - vii. Clean up and completion work.
 - 4. Work not completed prior to start of school shall be completed in cooperation with the owner's schedule of operations.

EXAMINATION OF SITE AND CONTRACT DOCUMENTS

- A. Bidder shall carefully examine bidding documents and inspect on site to obtain first-hand knowledge of existing conditions.
- B. Each Bidder, by submitting his bid, represents over his or her signature, that he has examined the bidding documents and inspected the site premises, that he understands the provisions of the bidding documents, and that he has familiarized himself with the local conditions under which the work is to be performed. Bidders will not be given extra payment or contract time for conditions, which could have been determined by such examination.
 - a. All work included: demo, install new, complete with all associated work equivalent to existing installation, plus additional control work, and clean up.
- C. Contract Documents Include
 - a. This specification
 - b. The Bid form
 - c. Drawings dated 7/1/2021, sheet 1
 - d. The Dectron submittal data dated 7/21/2020

BIDDER QUALIFICATIONS

- A. Competency and responsibility of the Bidder, and of their proposed subcontractors, will be considered in making awards. Owner may require of the Bidder, prior to awarding the Contract, a detailed statement regarding the business, technical organization and plant facilities for the work that is contemplated. Information pertaining to the financial resources, experience of personnel and previously completed similar construction projects are required upon request. The Owner may use this information in considering proposal.
- B. The Owner may reject a Bidder, if an updated financial statement prepared by a CPA not on the Contractor's payroll (bearing the CPA's live signature) shows the net worth of a Contractor to be less than 50% of the Contractor's bid including elected alternates for this work. Said statement, if required by the Owner, shall be furnished and paid for by the Bidder.
- C. The Owner reserves the right to reject any subcontractor to a prime contractor that cannot produce a favorable recommendation from a minimum of three (3) school districts or commercial owners involving a like size project or from said school district's Architect of record.

PROGRESS PAYMENTS

- A. Payment will be made for satisfactorily in place labor and materials,

- B. No payment for off-site stored materials. It is the intent once equipment is available it will be promptly installed.

EQUAL OPPORTUNITY EMPLOYMENT: The following clause is applicable unless this Contract is exempt under the rules and regulations of the Secretary of Labor of the State of Illinois.

“During the Performance of the Contract, the Contractor agrees as follows:

The Contractor will not discriminate against any employee or applicant for employment because of race, color, religion, sex, age or national origin. The Contractor will take affirmative action to ensure that applicants are considered and that employees are treated, during employment, without regard to their race, color, religion, sex, age or national origin.”

PREVAILING WAGE

- A. The Contractor shall pay and shall require his subcontractors to pay the prevailing hourly wages for the type of work performed in the job locality as is determined by the Illinois Department of Labor pursuant to the Illinois Prevailing Wage (280 ILCS 130/.01 et. seq.), see IDLR website for rates..
- B. Comply with HB188; submit payroll records with invoices or end of month.
- C. Certified payrolls shall be logged into the Illinois Department of Labor portal not more than monthly with information how to access be provided to the Owner and A/E.
<https://www2.illinois.gov/idol/Laws-Rules/CONMED/Pages/Prevailing-Wage-Portal.aspx>

SALES TAX

- A. Materials supplied to a public school district are exempt from state sales taxes.
- B. The Contractor shall determine the extent of exemption and shall comply with the regulations established by the Illinois Department of Revenue and allow for this in his proposal.

TOBACCO PRODUCTS

- A. Smoking, chewing, etc. shall not be permitted anywhere on school property by State Statute.

SEXUAL HARASSMENT POLICY

- A. The Owner will not tolerate sexual harassment in any form. Sexual harassment is defined, for the purpose of the policy, as “unsolicited, deliberate or repeated sexually derogatory statements, gestures or physical contact which cause discomfort or

humiliation. Sexual harassment may involve pressure from a person of either sex against a person of the opposite sex or same sex...”

Should evidence be discovered that a Contractor, or a Contractor's employee, has harassed a student or other individuals, the harasser shall be removed from the job site pending resolution of the claim.

EMPLOYEE-STAFF/STUDENT RELATIONSHIPS

- A. Except in an emergency situation involving safety, intermingling of the Contractor's employees and the school facility, staff and students is to be avoided. Contractor or Subcontractor personnel violating this requirement shall be removed from employment at this site. The Contractor Superintendent shall monitor this to the best of his ability. Contractor employees experiencing problems with students or faculty shall report same to their Project Superintendent, who shall promptly report the problem to an authorized representative of the Owner.

Avoid profanity and inappropriate subject matter in conversation as students and staff may be within audible range and walls or ceiling spaces may allow sound transmission.

Verbal or physical action interpreted as sexual in nature or as sexual harassment will be grounds for removal of the employee. Further legal action remains the option of the persons affected.

In all aspects of this provision the Contractor shall be dealt with by the school, the Contractor's employees as adults have the greater responsibility and should not respond to inappropriate student behavior.

- B. Employees working on site may be subject to background check per the Illinois School Code, and upon request of the Owner or the Regional Office of Education.

BUILDING PERMITS

- A. The building permit will be required by the Owner through the Regional Office of Education and comply with local regulations and requirements.
- B. Provide all necessary permit related information to local city authorities.

TERMINATION OF CONTRACT

Termination of the agreement can be instituted with seven (7) days notice by the Owner for failure to perform in accordance with the agreement, schedules, non-payment of goods or services or other evidence of failure to perform to the intent of the agreement. Cost of said termination will be subject to the project completion by the Owner with the Contractor paying any shortfall in cost to complete. If the project is completed for less than the outstanding contract balance, then the Contractor will receive the remainder after all claims are satisfied.

BACKGROUND INVESTIGATION AND SEX OFFENDERS ON SCHOOL GROUNDS

- A. Illinois Criminal Background checks may be applicable to this Contract. per 105 ILCS 5/10-21.9 and 105 ILCS 5/14-7.02.
 - 1. According to current interpretation a background check is only required of persons working in direct contact with students.
 - 2. This standard in no way reduces or eliminates restriction in the law for certain convictions and proximity to school grounds.
- B. The Contractor shall:
 - 1. Maintain a list available to the Owner of all the employees who will be or are anticipated will be employed on site. This list shall be updated when new persons not originally listed will be working on site. This list shall also include names of personnel employed by subcontractors.
 - 2. Persons temporarily on site such as truck drivers or employees making deliveries do not need to be listed, but the Owner reserves the right to request a background check if deemed in their interest.
 - 3. Copies of employee lists shall be promptly provided to the Owner upon request and employees on site shall agree to submit to a background check if requested..
 - 4. Persons failing such check or refusing shall be removed from working on this site.
- C. The Contractor shall not knowingly employ on school grounds any person who has not signed or will not sign an authorization for a fingerprint criminal background check.
- D. The Owner reserves the right to request or run fingerprint background checks on any or all employees on site, randomly or specifically, and the cost of this check will be borne by the Contractor. Upon request, provide information, which will not be shared, as needed to complete checks. This may include SSN, home addresses, fingerprint, address, etc. and any alias or former names used. Owner will use the services of the local Regional Office of Education #26 for this service.
- E. The Contractor shall assume the responsibility to notify all on site employees or potential employees of this provision, and of the consequences of this provision.

EXPIRATION OF PROPOSAL – I/We agree that this proposal shall be binding for a period of not less than twenty (20) days following the bid due date set forth in the advertisement for bids.

WORK INCLUDED – DESIGN BUILD PROPOSAL

- A. All work necessary to remove and dispose of the existing Dectron and adapt piping and controls to accommodate the proposed replacement geo thermal Dectron with poolwater heating.
 - 1. Existing unit is Dectron DS-182 16,000 cfm, 191 Lb/hr moisture removal, 504,400 Btuh cooling, 336,260 Btuh sensible, 492,025 Btuh heating assembly.
 - 2. Properly prepare for removal including removal of refrigerant, disconnect power, controls and piping.
 - 3. Promptly remove the existing equipment from site during the process of installation of new equipment.

B. Proposed unit to be **Dectron Model #: 2xDS-102-VC-I-V3NT5652W2E3AN0**
<https://dectron.com>
5685 Rue Cypihot
Saint Laurent, Quebec H4S 1R3
1-514-336-3330

1. Low voltage control side phase control to protect against operation during phase low voltage, or loss of phase with auto reset after voltage returns to normal.

B. Piping

1. Verify existing piping and modify and replace as needed for proper function and operation, support piping against movement and vibration
2. Insulate as existing

C. Controls

1. On board Dectron controls to be integrated to monitor and adjust basic set points through the ECSI bacnet controls through the BAS system. **VERIFY with ECSI before determining final control package on Dectron.**
2. Controls to enable the Dectron and monitor performance
3. Dectron internal controls to control operation
4. Verify and reconnect all pumps for proper control and operation. Verify and coordinate

D. All periphery loop pumps and fresh air are is existing, verify compatibility to selected Dectron size and flow rates. Make accommodation as needed for proper operation.

E. Start up: by contractor, to include instructions and maintenance instruction

1. Provide training to Macomb maintenance staff at start up
2. Provide for additional two days training during one year following installation, ½ day for covering seasonal changes and questions that arise during use and maintenance.

F. Warranty


1. One (1) year 100% labor and materials on the entire installation
2. Two year service agreement parts and labor for all new work.
3. Five (5) year manufacturer on refrigeration components and compressors of the new equipment.


VOLUNTARY ALTERNATES, OPTIONS OR SUBSTITUTIONS

- A. The Contractor may offer options which they believe will improve the result, be more serviceable, lower initial cost, lower operating costs, time factors for lowest down time and maintenance. This might include:
- a. Other manufacturers.
 - b. Because cost is a consideration we may consider such options as determined to offer comparable and suitable results.

ATTACHMENTS PROVIDED


- A. Original drawings sheets from original installation

 10028-E1.1

 10028-M2.2

a.  10028-M4.1

B. This information provided for information only, always verify conditions on site.



Project #: 54979.4
Project Name: Macomb High School [Repl. 24078]
Prepared For: Chris Swallow
Thermal Mechanics Inc Stl
Dectron Model #: 2xDS-102-VC-I-V3NT5652W2E3AN0

<https://dectron.com>

5685 Rue Cypihot
Saint Laurent, Quebec H4S 1R3
1-514-336-3330

September 8, 2020

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Macomb High School [Repl. 24078]**DS-102-VC-I-V3NT5652W2E3AN0**

Model	20 Ton 2 - compressor dehumidifier
Unit Subseries	Pool Water Heater, Vented
Unit Location	Indoor
Cabinet	Horizontal 2-in Double Walled - Horizontal Return
Supply Voltage	460V-480V/3PH
Unit Control	Supervisaire c/w Building Communication
Refrigerant	R410A
Outdoor Air	OA Inlet Motorized Damper & Filter
Exhaust Fan	None
Space Heating	Unit mounted hot water coil
Heat Control	Modulating - factory supplied and wired valve
Air Conditioning	Fluid Loop - Max 105F EWT
Warranty	Standard - 2 years on driveline, 2 years on compressor, 2 years on coils
Extras	Double-Decker 40-ton Total - 2BI Cabinet Config Required 13500 CFM @ 1.35" Total Supply Air TAD (4xDG fans with 18" stretch) 3255 CFM OA Total TOP connection 298 MBH Total with a HW Coil in each deck (29.8 + 29.8) GPM
Supply Air CFM	6500
Outdoor Air CFM	1500
Supply Air Orientation	Top Supply
Outdoor Air Orientation	Top
Pool Water Connection	Side
Condensate Drain	Side
Heating Capacity	140 MBH
Entering Water Temperature	120 F

**Macomb High School [Repl. 24078]
2xDS-102-VC-I-V3NT5652W2E3AN0**

Design Data

Outdoor Air (CFM)	3255
ESP	0.5 inches
Room Conditions (°FDB/%RH)	82/60
Unit Total Airflow (CFM)	13500

Electrical Data

Unit Voltage (V/Ph/Hz)	460V-480V/3PH/60
Unit Full Load Amps - FLA (A)	99.6
Unit MCA (A) (min circuit ampacity)	105
Unit MOP (A) (max overcurrent protect)	125

Supply Air Blower

Airflow (CFM)	13500
Type	Plenum
Unit ESP (in WC)	1.35
Number of Motors	4
Motor HP	3.9
Motor FLA (A)	3.7
Motor Drive	Direct Drive

Compressor

Type	Scroll
Number of compressors	4
Refrigerant	R410A
Motor RLA/LRA (A)	21.2/122.0

Evaporator Coil

Sensible Capacity (MBH)	315.8
Total Capacity (MBH)	574.2
Latent Capacity (Lbs/h)	228.2
Circuits	4

Reheat Coil

Total Heat Rejection (MBH)	717.8
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Pool Heating

Type	Cupro-nickel Co-axial Vented
Capacity (MBH)	372
Water Flow Rate (GPM)	72
Water Pressure Drop (PSI)	6
Connection Size (in)	2004-01-01
Connection Type	Stub
Connection Stub Material	PVC

Maximum Circuit Pressure Rating (PSI) 60

Auxiliary Heat

Location	Unit Mounted
Type	Hot Water Coil
Total Number of coils	2 (1 in each deck)
Capacity (MBH)	290.6
Entering/Leaving Fluid Temp (°F)	120/110.1
Entering/Leaving Air Temp (°F)	82/107.6
Unit Fluid Flow Rate (GPM)	59.6
Fluid Pressure Drop (ft)	17.96
Valve Pressure Drop (ft)	2
Total Pressure Drop (ft)	19.96
Connection Size (in ID)	1 1/4
Connection Type	Stub
Maximum Circuit Pressure (psi)	250
Control	Modulated

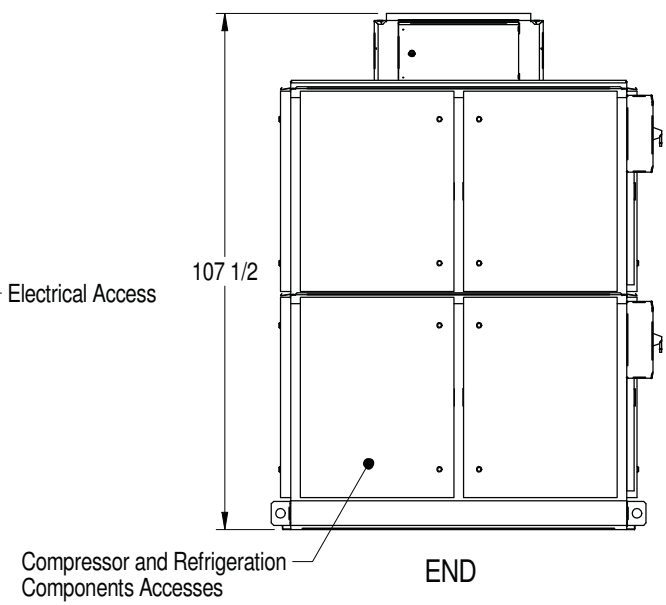
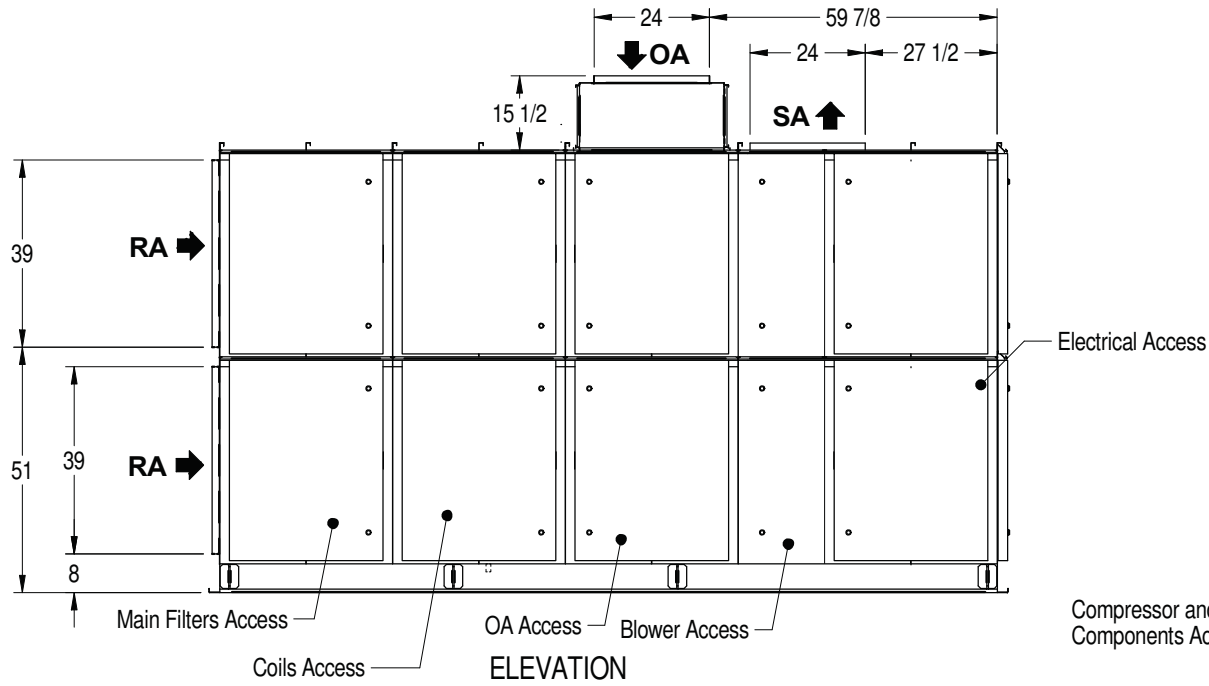
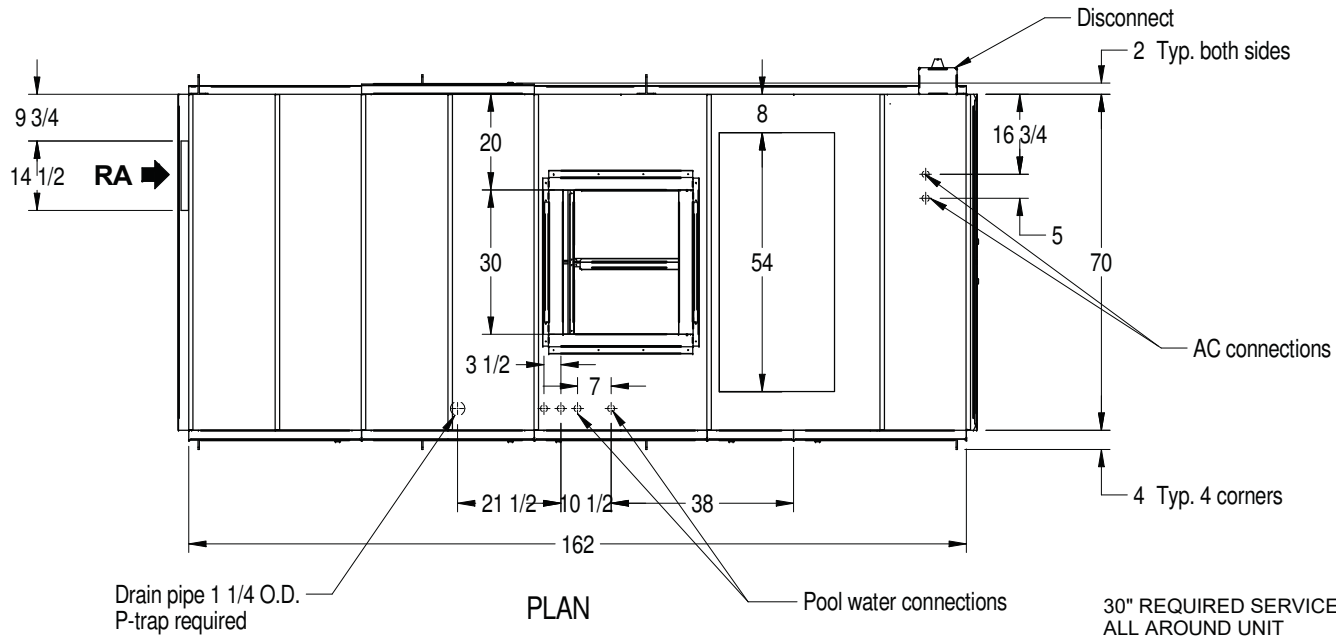
Water Cooled A/C

Max entering fluid temperature (F)	105
Water Flow Rate (GPM)	50 ; 50
Water Pressure Drop (PSI)	2.7
Connection Size, in/out (in OD)	1 1/2
Connection Type	Stub

DESCRIPTION
MODEL: DS/DA5 Double wall
 040/050/060/070/080/082/102

CAD FILE
2BI-S-HT-SIE0P0 TOA 2xDG

DATE 07/21/20	REV 0
DRAWN BY qroberts	SHEET 1 OF 1

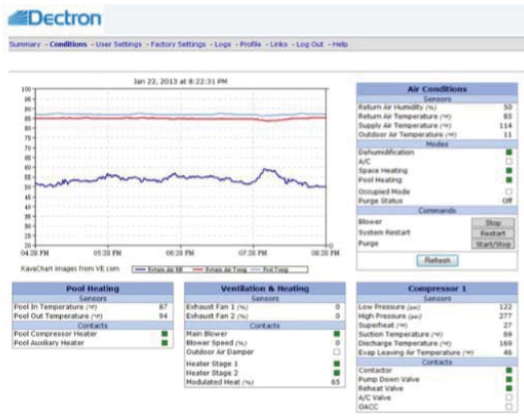


UNIT OPERATING WEIGHT: 6600 LBS (A=20%, B=30%, C=30% & D=20%)

(A)	(B)
(D)	(C)

DECTRON VISION 2.0 – EASY TO USE INTERFACE & PRECISE READINGS

Vision 2.0 provides our customers with full control over their Dectron dehumidifier. Providing a powerful array of capabilities designed to ensure peak operating performance while minimizing down time and instant access to performance data. Every aspect of the dehumidifier’s performance can be personalized, monitored, analyzed and adjusted at any time. Dectron Vision 2.0 has been designed to detect and protect each and every dehumidifier with real time monitoring, 24 hours a day, 365 days a year.



Should an alarm occur, Dectron Vision 2.0 will automatically notify a service contractor of the customer’s choice via email. Additional notification can also be personalized to include any additional contacts the client selects. Upon notification, authorized service technicians can login to the system, to observe, adjust and control important parameters in real time using the web or smart phone interface.

Dectron Vision 2.0 provides piece of mind by providing a proactive approach to service and dehumidifier maintenance. Fewer service calls and minimum down time result in direct cost savings for clients all while adding value to the initial investment.

Dectron Vision 2.0 Advantages

- Premium extended 1st year warranty – parts and labor
- Fully monitored remote factory start-up capability
- Comprehensive installing contractor support
- Smart phone interface

Dectron Vision 2.0 Capabilities

- Remote monitoring for lifetime of dehumidifier
- Live monitoring and alarm service
- Secure online access to real time data
- Secure access for personalized setting adjustments



SUPERVISAIRE – EFFICIENTLY CONTROLLED SYSTEM

Supervisaire Capabilities

- Remote system control that is automated and programmable,
- Allows for personalized control of hundreds of operating parameters
- Real time clock including battery back-up
- Programmable interface with web and smart phone control capability for easy use
- Optional remote operator panel unit can be located up to 1,000 ft. away from unit
- Secure remote control via the Internet or smart phone with Dectron Vision 2.0 that monitors real time, performance data and analysis.

Supervisaire Specifications

- Control for space dehumidification, heating and cooling (staged and modulated)
- 24 digital outputs and 4 analog outputs used for controlling components
- Sensors for that monitor the space, refrigerant pressures and pool conditions
- 2 RS-485 serial ports and 1 RS-232 serial port
- 1 Ethernet port (RJ45)
- LON, Modbus, BACnet building automation options available

Sensor Information

- Refrigerant high pressure
- Refrigerant suction pressure
- Outside air temperature
- Outside air humidity
- Air temperature leaving the evaporator
- Supply air temperature
- Compressor superheat temperature
- Compressor compartment temperature

Technician Mode for Service

- History log of sensor data including date/time
- Log of all alarms and status (past and current)
- Operations history log
- Force modes of operation
- Damper adjustment
- Damper Calibration
- Internal and External Contacts Testing

Alarms

- Communication fault, Sensor fault, Dirty filter, High refrigerant pressure fault, Low refrigerant pressure fault, No airflow, Blower overload, Firestat, High supply air temperature

INDUSTRY LEADING FEATURES

Dectron dehumidifiers match or exceed the specifications of every other competitor in the marketplace.

Fully Dipped Coils

- Provide 100% protection against corrosion (not just the fins)

Service Vestibule Outside Air Stream

- Protects critical components from chlorinated air stream, maximizes AC efficiency, and allows unit servicing while in operation

Ultra Compact Designs

- Up to 14 tons of dehumidification fitting through a 30 inch door

Built-in Refrigerant Pressure Transducers

- Allow 24-7 Monitoring of critical suction and discharge pressures to ensure optimal system performance

Superior Compressor Protection

- Advanced monitoring and control technologies to protect compressors including sight glasses on receivers

Direct Driven, Backward Inclined Airfoil Plenum Fans

- Provide powerful, quiet, efficient, reliable performance with no belts to adjust, wear out or replace
- These fans also allow factory installed auxiliary air heating while providing maximum flexibility for supply air duct options

Ultra Compact Designs

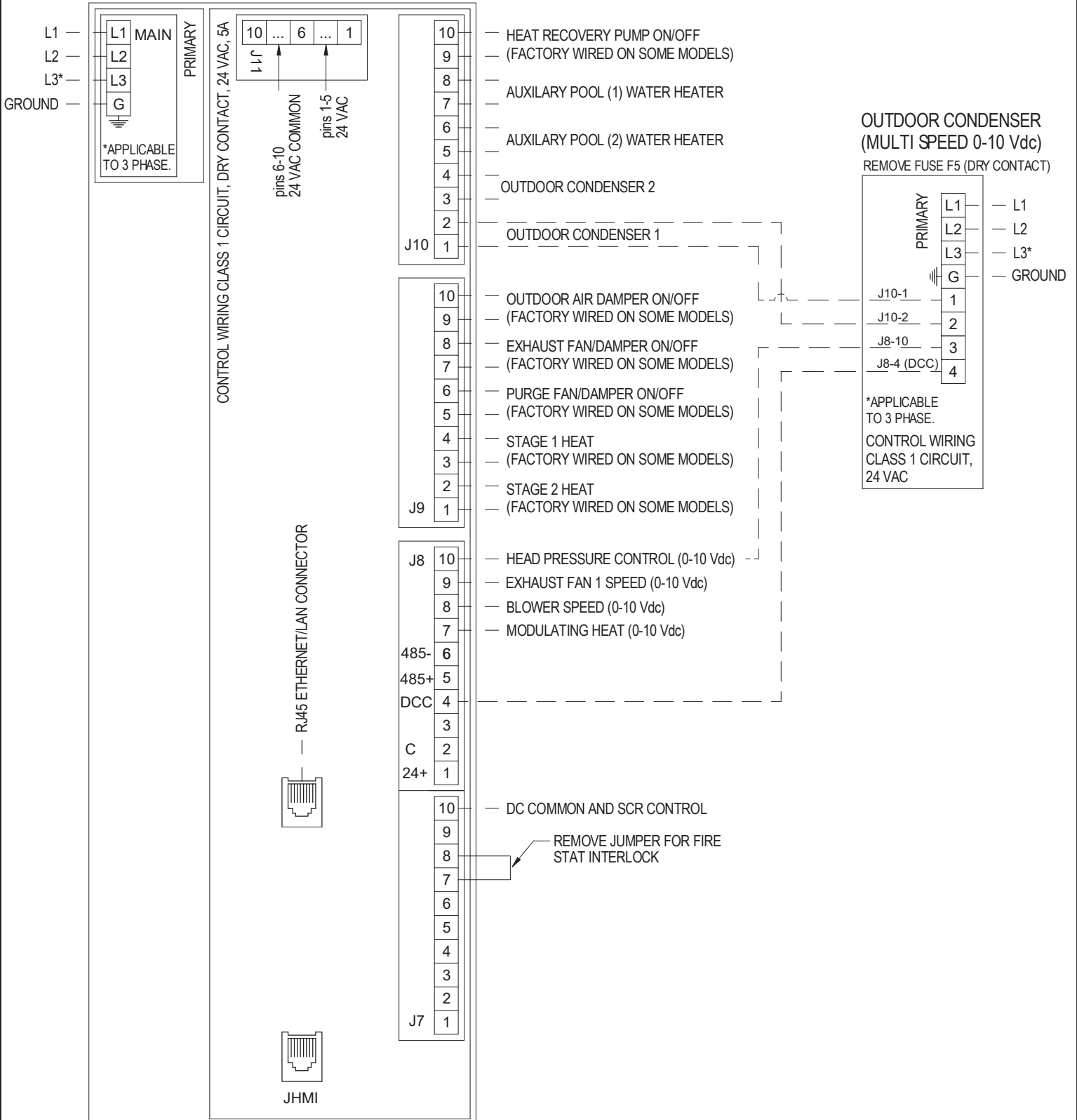
- Up to 14 tons of dehumidification fitting through a 30 inch door



DRAWING NUMBER			REV	COMMENTS	DATE	APPROVED
FWD-DS-Z-00			1			
FILE: Dectron-FWD-DS-Z-00			2			
			3			
DFTN	DATE	REV #: 0.0	4			
bsimpson	08/31/17	SHEET 1 OF 1	5			
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DS Series Field Wiring Diagram with NC-Z/NC-B/NG-Z Remote Condenser

DEHUMIDIFICATION UNIT



BACnet Interface, DS/LD Dehumidification Units

General

This document describes the BACnet interface provided with the dehumidification unit. The first part describes the BACnet interface itself with device properties and supported points (objects) grouped by function. The used object types are as follows.

AI Analog Input
 AV Analog Value
 BV Binary Value

ID defines the object id.

At the end of the document you will find some sections describing unit BACnet specific configuration including how to override sensors.

Note that some points might not be visible in the BACnet interface. Some points are dependent on current unit configuration while others are optional (command inputs) that needs to be enabled in the unit's user interface before they are visible and can be used in the BACnet interface. This is indicated in the Notes column for each point.

Device Properties

Default Name: Dehumidifier
 Default Instance: 150
 Segmentation Not Supported
 Max APDU Length: 1476

Room Conditions

Temperature sensors are measured in either Celsius or Fahrenheit depending on unit configuration.

Type	ID	Name	Notes
AI	0	Return Air Humidity	Humidity of air returned from the controlled space.
AI	1	Return Air Temperature	Temperature of air returned from the controlled space.
AI	40	Return Air Dew Point	Dew point air returned from the controlled space. This sensor is disabled by default and needs to be enabled from the unit's user interface.
AI	41	Wall Temperature	Dew point temperature measured on a wall. It is an optional sensor that is not installed in the unit but has to be installed in the controlled space. It is used to detect dew on walls and will automatically lower the humidity setpoint to ensure unit running in dehumidification mode. This sensor is disabled by default.
AV	0	Room Temperature Occupied Setpoint	Desired room temperature when day time mode is Occupied. Range: 55 – 95 °F

AV	1	Humidity Occupied Setpoint	<p>Desired humidity when day time mode is Occupied.</p> <p>Range: 35 – 85 %</p>
AV	13	Humidity Floating Setpoint	<p>Desired humidity level. This is the actual setpoint that is used for humidity control. It will be set to either AV 1 or AV 17 depending on if day time mode is Occupied or Unoccupied.</p> <p>If a wall temperature sensor is installed, it will be adjusted based on the reading of the wall temperature sensor. This setpoint will be the lowest of wall temperature demand and either AV 1 or AV 17 setpoints.</p> <p>Lowest humidity level is 35%.</p>
AV	16	Room Temperature Unoccupied Setpoint	<p>Desired room temperature when day time mode is Unoccupied.</p> <p>Range: 55 – 95 °F</p>
AV	17	Humidity Unoccupied Setpoint	<p>Desired humidity when day time mode is Unoccupied.</p> <p>Range: 35 – 85 %</p>
AV	768	Return Air Temp	<p>This point can be used to overwrite the value of AI 1. For instance, if customer has installed a room temperature sensor and wants the unit to control the room temperature based on this sensor opposed to the default return air temperature sensor in the unit.</p>
AV	769	Return Air RH	<p>This point can be used to overwrite the value of AI 0. For instance, if customer has installed a room humidity sensor and wants the unit to control the room humidity based on this sensor opposed to the default return air humidity sensor in the unit.</p>
BV	260	Dehumidification Mode	<p>Active when unit is dehumidifying the controlled space.</p>
BV	261	A/C Mode	<p>Active when unit is cooling the controlled space.</p>
BV	262	Heating Mode	<p>Active when unit is heating the controlled space.</p>
BV	524	A/C Override	<p>Use this command input to force A/C. This overrides any other room temperature control decision made by the system.</p> <p>This feature is intended for cases where an external thermostat is used to control the space. The signal from the thermostat can then be used to force a A/C demand when thermostat goes into cooling mode.</p> <p>This command input is disabled by default.</p>
BV	525	Heat Override	<p>Use this command input to force space heating. This overrides any other room temperature control decision made by the system.</p> <p>This feature is intended for cases where an external thermostat is used to control the space. The signal from the thermostat can then be used to force a heating demand when thermostat goes into heating mode.</p> <p>This command input is disabled by default.</p>

Pool Water

Temperature sensors are measured in either Celsius or Fahrenheit depending on unit configuration.

Points labelled as just Pool or Pool 1 are only visible in BACnet interface if unit is configured to heat pool 1. Points labelled as Pool 2 are only visible in BACnet interface if unit is configured to heat pool 2. Points labelled as just Pool are pool 1 points in a 2 pool configuration.

Type	ID	Name	Notes
AI	13	Pool Water In Temperature	Water temperature coming from pool 1.
AI	14	Pool Water Out Temperature	Water temperature going to pool 1 after it has been heated.
AI	32	Pool 2 Water In Temperature	Water temperature coming from pool 2.
AI	33	Pool 2 Water Out Temperature	Water temperature going to pool 2 after it has been heated.
AV	2	Pool Temperature Setpoint	Desired pool water temperature for pool 1. Range: 60 – 108 °F
AV	6	Pool 2 Temperature Setpoint	Desired pool water temperature for pool 2. Range: 60 – 108 °F.
AV	772	Pool 1 Water Temperature	This point can be used to overwrite the value of AI 13. For instance, if a pump is used to only pump water through the unit on a pool water heating demand, a remote sensor needs to be installed where water can be measured all the time. Write the remote sensor value to this point and AI 13 will be updated and proper pool 1 water temperature control will be maintained.
AV	773	Pool 2 Water Temperature	This point can be used to overwrite the value of AI 32. For instance, if a pump is used to only pump water through the unit on a pool water heating demand, a remote sensor needs to be installed where water can be measured all the time. Write the remote sensor value to this point and AI 32 will be updated and proper pool 2 water temperature control will be maintained.
BV	5	Pool Heating Valve	Active when valve is open for pool 1 water heating coax on compressor circuit.
BV	14	Auxiliary Pool Heater	Active when auxiliary pool water heater is turned on for pool 1.
BV	33	Pool Heating Valve, Pool 2	Active when valve is open for pool 2 water heating coax on compressor circuit.
BV	34	Auxiliary Pool Heater, Pool 2	Active when auxiliary pool water heater is turned on for pool 2.
BV	263	Pool Heating Mode	Active when unit is heating a pool. Either pool 1 or pool 2.
BV	520	Pool 1 Heater	Use this command input to enable/disable pool 1 water heating control. This does not start or stop pool water heating but enables/disables it to be used by the controller. This command input is disabled by default.
BV	521	Pool 2 Heater	Use this command input to enable/disable pool 2 water heating control. This does not start or stop pool water heating but enables/disables it to be used by the controller.

			This command input is disabled by default.
BV	773	Pool 1 Water Flow Fault	Active when there is a pool water flow fault for pool 1.
BV	803	Pool 2 Water Flow Fault	Active when there is a pool water flow fault for pool 2.
BV	833	Pool 1 Bad Waterflow	Active when there has been a compressor alarm shortly after pool 1 heating valve was opened. Compressor alarm is then considered being triggered by opening the pool 1 water valve.
BV	834	Pool 2 Bad Waterflow	Active when there has been a compressor alarm shortly after pool 2 heating valve was opened. Compressor alarm is then considered being triggered by opening the pool 2 water valve.
BV	835	Pool 1 High Temperature	Active when pool 1 high water out temperature alarm is triggered by pool 1 water out being 115 °F or more.
BV	836	Pool 2 High Temperature	Active when pool 2 high water out temperature alarm is triggered by pool 2 water out being 115 °F or more.

Supply Air

Temperature sensors are measured in either Celsius or Fahrenheit depending on unit configuration.

Type	ID	Name	Notes
AI	8	Supply Air Temperature	Temperature of air supplied to the controlled space.
AI	55	Supply Airflow	Supply airflow measured in CFM. This sensor is only available if unit is equipped with air pressure differential sensors.
AV	257	Blower Speed	Supply fan speed as a percentage of total capacity.
BV	0	Blower Contactor	Active when the supply fan is running.
BV	512	Blower Enabled	Use this command input to enable/disable the supply fan. Note that this only indicates the desired status of the supply fan. Use BV 0 to see the actual running status. If fan is running and status is changed to Inactive, it might take a minute before it stops if a compressor is running. A compressor needs to go through a pump down sequence before it can be stopped. Supply fan can also be disabled from the local user unit interface which will override the status of this point. Supply fan needs to be enabled from both interfaces for the supply fan to run. There can also be an alarm preventing the supply fan from running. See status of the alarm points below. This command input is disabled by default.
BV	523	Blower Override	Use this command input to enable supply fan secondary speed. Set to Active for secondary speed and Inactive for normal speed.

			Speed settings are configured form unit's user interfaced. This command input is disabled by default.
BV	768	Blower Overload	Active when there is a supply fan motor overload alarm. If blower overload 2 is enabled, both overload alarms needs to be tripped before stopping blower operation.
BV	837	Blower Overload 2	Active when there is a supply fan motor overload alarm for fan 2. This input is disabled by default. Blower operation will not be stopped unless both overload alarms are tripped.
BV	769	No Airflow	Active when air flow sensor measures a too low air flow.
BV	772	Dirty Filter	Active when an air flow sensor used to detect dirty filters is measuring a too low air flow. This input is disabled by default.
BV	810	Freezestat 2 Alarm	Active when a too low supply air temperature has been detected and sustained a few minutes after closing outdoor air dampers.

Outside Air / Exhaust

Temperature sensors are measured in either Celsius or Fahrenheit depending on unit configuration.

When referring to fans it is referred to controlled fan groups, minimum exhaust and purge fans. Each group can consist of multiple physical fans but they are started and stopped by the controller as if there is only one fan in each group.

Type	ID	Name	Notes
AI	12	Outdoor Air Temperature	Temperature of the outside air. This sensor is disabled for units with no outside air intake.
AI	30	Exhaust Air Temperature	Temperature of the exhausted air. This sensor is disabled for units with no exhaust installed.
AI	34	Outdoor Air Humidity	Humidity of the outside air. This sensor is disabled for units with no outside air intake.
AI	35	Outdoor Air Dew Point	Dew point of the outside air. This sensor is disabled for units with no outside air intake and might be disabled by default even if there is an outdoor air intake installed in the unit.
AV	3	Heat Recovery Setpoint	Outside air temperature at which the heat recovery pump (if one is installed) will start if temperature drops below this setpoint.

			Range: 40 – 70 °F
AV	4	Purge Setpoint	Return air temperature at which purge mode will be stopped if unit is running in purge mode. Range: 40 – 70 °F
AV	5	Economizer Min OA Setpoint	Outside air temperature at which economizer will not be used if temperature drops below this setpoint. Range: 40 – 90 °F
AV	7	Freezestat Setpoint	Supply air temperature at which outside air dampers will be closed and exhaust stopped if day time mode is Lights On. If supply air temperature stays below this setpoint for a few minutes after above action, the main blower will also be stopped. Range: 20 – 55 °F
AV	260	Outdoor Air Damper 1	Indicates how much the outdoor air damper 1 (minimum OA) is opened as a percentage if max opening. This output is only used if unit is using a modulated actuator for the damper. Otherwise BV 18 is used to determine if damper is opened or closed
AV	261	Outdoor Air Damper 2	Indicates how much the outdoor air damper 2 (purge) is opened as a percentage if max opening. This output is only used if unit is using a modulated actuator for the damper. Otherwise BV 44 is used to determine if damper is opened or closed. Damper is then tied to the exhaust fan 2 control.
AV	264	Exhaust Fan 1	Exhaust fan 1 (minimum exhaust) speed as a percentage of total fan 1 capacity. This output is only used if unit is using a modulated actuator for the fan. Otherwise BV 42 is used to determine if the fan is running.
AV	265	Exhaust Fan 2	Exhaust fan 2 (purge) speed as a percentage of total fan 2 capacity. This output is only used if unit is using a modulated actuator for the fan. Otherwise BV 44 is used to determine if the fan is running.
AV	512	Purge Interval	Defines number of minutes unit will be running in purge mode after it has been started. If you set this timer to 0, purge will be running until purge mode is stopped manually. Range: 0 – 60 Min
AV	513	Exhaust Level	Indicates exhaust level as a percentage of total exhaust. For a unit with both minimum and purge

			exhaust fans, total capacity is the combined fan capacity of both fans.
AV	517	Elapsed Purge Time	Number of minutes unit has been running in purge mode.
AV	770	Outdoor Air Temp	This point can be used to overwrite the value of AI 12.
AV	771	Outdoor Air RH	This point can be used to overwrite the value of AI 34.
BV	13	Heat Recovery Pump	Active if heat recovery pump is turned on. The point will change status even if there is no pump wired to the terminal. You need to know if a heat recovery pump is installed to see if this point is useful to show in a BACnet interface.
BV	18	Outdoor Air Damper	Active if outdoor air damper 1 (minimum OA) is open. This output is only used if unit is using an on/off actuator for the damper. Otherwise AV 260 is used to determine how much the damper is opened.
BV	42	Exhaust 1	Active if exhaust fan 1 (minimum exhaust) is running. This output is only used if unit is using an on/off actuator for the fan. Otherwise AV 264 is used to determine the fan speed.
BV	44	Exhaust 2	Active if exhaust fan 2 (purge) is running. This output is only used if unit is using an on/off actuator for the fan. Otherwise AV 265 is used to determine the fan speed.
BV	259	Purging	Active if unit is in purge mode.
BV	513	Purge	Use this command input to start/stop purge mode. Purge mode will automatically be stopped if you have set the purge interval using AV 512. If purge interval is set to 0, you have to stop purge mode by setting this point to Inactive. This command input is disabled by default.
BV	516	Day Time Mode	Use this command to set day time mode (Occupied/Unoccupied). Set to Active for Occupied and Inactive for Unoccupied. This command input is disabled by default.
BV	526	Spectator Mode	Use this command input to start/stop spectator mode (swim meet mode). This command input is disabled by default.
BV	771	Freezestat Alarm	Active when a too low supply air temperature has

			been detected.
BV	790	Heat Recovery Overload	Active when there is a heat recovery pump overload alarm.
BV	793	Purge Alarm	Active when return air temperature has dropped below purge setpoint (AV 4).
BV	802	Exhaust Fan 1 Overload	Active when there is an exhaust fan 1 motor overload alarm.
BV	812	Exhaust Fan 2 Overload	Active when there is an exhaust fan 2 motor overload alarm.

Space Heating

Temperature sensors are measured in either Celsius or Fahrenheit depending on unit configuration.

Type	ID	Name	Notes
AV	256	Modulated Heat	Indicates heating level as a percentage of total capacity. This output is only used if unit is using a modulating valve for heating control. Otherwise use BV 21 and BV 22 to determine current heating stage.
BV	21	Stage 1 Heat	Active when heating stage 1 is on. For units using a modulating heating valve, this will also be Active when modulating heating source is turned on. Use AV 256 do determine the heating level.
BV	22	Stage 2 Heat	Active when heating stage 2 is on (for units with 2 stage heaters). For units using a modulating heating valve, this will also be Active when heating level is at or above a defined 2 nd stage heating level. This level is configured using the unit's user interface.
BV	518	Space Heater	Use this command input to enable/disable the space heater. This does not start or stop the heater but enables/disables it to be used by the controller. This command input is disabled by default.

Compressor Circuits

Temperature sensors are measured in either Celsius or Fahrenheit depending on unit configuration.
Pressure sensors are measured in PSI.

Circuit 1

Type	ID	Name	Notes
AI	2	Refrigerant High Pressure, Compressor 1	Refrigerant pressure on the circuit 1 discharge line.
AI	3	Refrigerant Low Pressure, Compressor 1	Refrigerant pressure on the circuit 1 suction line.
AI	6	Evaporator Temperature, Compressor 1	Air temperature off circuit 1 evaporator coil.
AI	9	Suction Temperature, Compressor 1	Temperature of circuit 1 suction line.
AI	26	Discharge Temperature, Compressor 1	Temperature of circuit 1 discharge line.
AI	36	Superheat, Compressor 1	Superheat temperature of circuit 1.
AV	10	Compressor 1 Load	Compressor load as a percentage of compressor 1 capacity. This output is only used if compressor 1 is configured as a modulated compressor.
BV	1	Compressor Contactor, Compr 1	Active if compressor 1 is turned on.
BV	2	Reheat Valve, Compr 1	Active if circuit 1 reheat valve is open. This output is only used if reheat control type is configured as Staged. This is configured from unit's user interface.
BV	3	A/C Valve, Compr 1	Active if circuit 1 A/C valve is open. This output is only used if reheat control type is configured as Staged. This is configured from unit's user interface.
BV	4	Pump Down Valve, Compr 1	Active if circuit 1 pump down valve is open. The pump down valve controls the refrigeration circulation.
BV	52	Compressor 1 Stage 2	Active if compressor 1 stage 2 is turned on. This output is only used if compressor 1 is configured as a 2 stage compressor.
BV	264	Compressor 1 Available	Active if compressor 1 is enabled and can be used for dehumidification and/or A/C control.
BV	774	Compressor 1 High Pressure	Active if there is a compr 1 high pressure alarm.
BV	775	Compressor 1 Low Pressure	Active if there is a compr 1 low pressure alarm.
BV	776	Compressor 1 Oil Fault	Active if there is a compr 1 oil failure alarm.
BV	777	Compressor 1 High Discharge Temp	Active if there is a compr 1 high discharge temperature alarm.
BV	797	Compressor 1 Low Superheat	Active if there is a compr 1 low superheat alarm.
BV	829	Compressor 1 High Superheat	Active if there is a compressor 1 high superheat alarm.
BV	804	Compressor 1 Pressure Fault	Active if there is a compressor 1 pressure fault alarm. This indicates that either the high pressure is too low or the low pressure is too high which is a sign of the compressor not running at all. Typically due to some compressor internal mechanical fault.

Circuit 2

These points apply to compressor circuit 2. They will only be available in BACnet interface if unit has been configured as a 2 compressor system.

Type	ID	Name	Notes
AI	4	Refrigerant High Pressure, Compressor 2	Refrigerant pressure on the circuit 2 discharge line.
AI	5	Refrigerant Low Pressure, Compressor 2	Refrigerant pressure on the circuit 2 suction line.
AI	7	Evaporator Temperature, Compressor 2	Air temperature off circuit 2 evaporator coil.
AI	10	Suction Temperature, Compressor 2	Temperature of circuit 2 suction line.
AI	27	Discharge Temperature, Compressor 2	Temperature of circuit 2 discharge line.
AI	37	Superheat, Compressor 2	Superheat temperature of circuit 2.
AV	11	Compressor 2 Load	Compressor load as a percentage of compressor 2 capacity. This output is only used if compressor 2 is configured as a modulated compressor.
BV	7	Compressor Contactor, Compr 2	Active if compressor 2 is turned on.
BV	8	Reheat Valve, Compr 2	Active if circuit 2 reheat valve is open. This output is only used if reheat control type is configured as Staged. This is configured from unit's user interface.
BV	9	A/C Valve, Compr 2	Active if circuit 2 A/C valve is open. This output is only used if reheat control type is configured as Staged. This is configured from unit's user interface.
BV	10	Pump Down Valve, Compr 2	Active if circuit 2 pump down valve is open. The pump down valve controls the refrigeration circulation.
BV	54	Compressor 2 Stage 2	Active if compressor 2 stage 2 is turned on. This output is only used if compressor 2 is configured as a 2 stage compressor.
BV	265	Compressor 2 Available	Active if compressor 2 is enabled and can be used for dehumidification and/or A/C control.
BV	778	Compressor 2 High Pressure	Active if there is a compressor 2 high pressure alarm.
BV	779	Compressor 2 Low Pressure	Active if there is a compressor 2 low pressure alarm.
BV	780	Compressor 2 Oil Fault	Active if there is a compressor 2 oil failure alarm.
BV	781	Compressor 2 High Discharge Temp	Active if there is a compressor 2 high discharge temperature alarm.
BV	798	Compressor 2 Low Superheat	Active if there is a compressor 2 low superheat alarm.
BV	830	Compressor 2 High Superheat	Active if there is a compressor 2 high superheat alarm.
BV	805	Compressor 2 Pressure Fault	Active if there is a compressor 2 pressure fault alarm. This indicates that either the high pressure is too low or the low pressure is too high which is a sign of the compressor not running at all. Typically due to some compressor internal mechanical fault.

General

These are points that apply to the overall control of all compressor circuits.

Type	ID	Name	Notes
AV	12	A/C Summer Only Setpoint	<p>Determines the highest outside air temperature at which the compressor circuits will operate in A/C mode.</p> <p>Unit also has to be configured to only use A/C in the summer. This is configured from the unit's user interface.</p> <p>Range: 40 – 70 °F</p>
AV	263	Reheat Level	<p>Indicates reheat level as a percentage of reheat valve fully opened. 0% thereby means full A/C.</p> <p>This output is only used when reheat control type is set to Modulated. This is configured from unit's user interface.</p>
BV	11	Bypass Damper Open	Active when bypass damper is opening.
BV	12	Bypass Damper Close	Active when bypass damper is closing.
BV	47	Compressor Pump	<p>Active when A/C pump is on or A/C valve is open.</p> <p>This output is only used if A/C Pump/Valve setting has been set to Yes. This is configured from unit's user interface.</p>
BV	515	Compressors Enabled	<p>Use this command input to enable/disable the compressor circuits. This does not start or stop compressor but enables/disables them to be used by the controller.</p> <p>This command input is disabled by default.</p>
BV	519	A/C Enabled	<p>Use this command input to enable/disable A/C control. This does not start or stop A/C control but enables/disables the usage of A/C by the controller.</p> <p>When output is set to Inactive, this overrides the A/C summer mechanism and usage of AV 12.</p> <p>This command input is disabled by default.</p>
BV	522	Emergency Heat	<p>Use this command input to change compressor control to emergency heating mode.</p> <p>Normally the compressor will not start on a heating demand. Space heater is used for heating the controlled space.</p> <p>In emergency heating mode the compressor will start on a heating demand and heat the controlled space. Space heater will not be used at all in this mode.</p> <p>This is intended for installations where hot water is used for heating and where the boiler is shutdown</p>

			<p>in the summer.</p> <p>Set to Active to engage emergency heating mode.</p> <p>This command input is disabled by default.</p>
BV	809	Compressor Pump Fault	<p>Active when there is a compressor pump overload alarm.</p> <p>This output is only used if A/C Pump/Valve setting has been set to Yes. This is configured from unit's user interface.</p>

Outside Air Condenser / Fluid Cooler

Type	ID	Name	Notes
AI	45	Cooling Fluid In	<p>Temperature of fluid entering fluid cooler.</p> <p>Sensor disabled by default.</p>
AI	46	Cooling Fluid Out	<p>Temperature of fluid leaving fluid cooler.</p> <p>Sensor disabled by default.</p>
AV	258	Head Pressure Control	<p>Indicates fan speed of outside air condenser or fluid cooler as a percentage of full speed.</p> <p>For water cooled units, this indicates the valve opening as a percentage of fully opened.</p>
BV	17	OACC/OAFC Fan 1	<p>Active when outdoor air condenser or fluid cooler is turned on.</p> <p>If unit is configured for a 2 condenser/fluid cooler, Active means that stage 1 is turned on.</p> <p>If unit is configured for a High/Low speed condenser/fluid cooler, Active means that low speed is being used.</p>
BV	46	OACC/OAFC Fan 2	<p>If unit is configured for a 2 condenser/fluid cooler, Active means that stage 2 is turned on. BV 17 will also be Active.</p> <p>If unit is configured for a High/Low speed condenser/fluid cooler, Active means that high speed is being used. BV 17 will not be active.</p>
BV	63	Fluid Cooler Pump	<p>Active when fluid cooler pump is turned on.</p> <p>Disabled by default.</p>
BV	794	OACC/OAFC Overload	Active when there is an outdoor air condenser or fluid cooler fan motor overload alarm.
BV	828	Fluid Cooler Pump Fault	<p>Active when there is a low fluid flow, indicating a pump fault.</p> <p>Only available when fluid cooler pump is enabled.</p>

Other

Type	ID	Name	Notes
AI	42	Unit Current	Overall unit load measured in Amp.
AV	515	Heartbeat Timer	<p>Defines max number of seconds in which at least one of any overridden sensor needs to be refreshed. If no overridden sensor is written to in this time frame, unit will rollback to built-in sensors.</p> <p>Set timer to 0 to disable heartbeat feature.</p> <p>See Overriding Sensor Values section below.</p> <p>Range: 0 – 600 Sec</p>
AV	518	Alarm Count	Indicates number of active alarms.
AV	519	Alert Count	Indicates number of active alerts. Alerts are alarms with less severity. For instance, Dirty Filter Alarm.
BV	16	System On	<p>Active when system is ready to control the space.</p> <p>The following criteria has to be met before the status is Active:</p> <ul style="list-style-type: none"> - Passed the initial start-up phase. - Is not shutting down. - Is not in service mode. - There are no alarms. - Supply fan is running. - At least one compressor is ready to use. <p>This output is disabled by default.</p>
BV	257	Service Mode	Active when unit is in service mode.
BV	770	Firestat Alarm	Active when firestat input is indicating an alarm.
BV	792	Voltage Fault	Active when voltage monitor is indicating a fault.
BV	801	Bad Battery	<p>Active when unit has determined that the mother board might be bad.</p> <p>This is determined if certain battery backed up configuration is reset after a power cycle. This does not necessarily mean that the battery bad. For instance, changing a core module will result in this alarm since the battery is located on the motherboard and not on the core module.</p> <p>If this alarm comes back every time after you reset alarm and power cycle unit, then you most likely need to replace the battery.</p>

Rebooting Unit

The unit can also be rebooted over BACnet. This is implemented using a standard BACnet message Reinitialize Device. The implementation of this message varies between different BACnet platforms so we can therefore not give any further information on exactly how this is done. You have to contact the manufacturer of the BACnet platform you are using.

The message supports different restart states. The only one this unit support is Warm Start.

A password is also required. Password is Restart254.

Enabling Sensors and Commands

Some sensors and command inputs are not enabled in the system by default. This means that they will not show up in the BACnet interface. Follow the instructions below to enable a sensor or command input. You can use the unit's user interface (TouchScreen Display) or Web Monitoring interface if unit is online to make these changes. TouchScreen Display interface is described below.

Enable Sensor

From top menu, select Advanced, Sensors and Sensor Usage. Find the sensor you need to enable. Change setting to Default.

It is also possible that a sensor has not been assigned to a terminal. If this is the case, you need to find out to which terminal sensor has been wired.

To assign sensor to a terminal, from top menu, select Advanced, I/O Assignments and Sensor Assignment. Find sensor and assign it to wired terminal. If a sensor already is assigned to this terminal, you first have to unassign the terminal from the other sensor. Find the sensor to which terminal is assigned and change assignment to None.

Enable Command Input

There typically are two steps involved to enable a command input for BACnet usage. First step is to assign input to BMS and second step is to enable the input for usage.

From top menu, select Advanced, I/O Assignments and Digital Input Assignment. Find command input you want to use over BACnet. Name should be the same or similar as listed in this document. Change assignment to BMS.

From top menu, select Advanced, Controls and Digital Input Enabled. Find command input you want to use over BACnet. Name is the same as for Assignment. Change setting to Yes.

Note that enabling a command will take affect immediately. This means you need to be ready to control it over BACnet or you might get undesired results. For instance, enabling the Blower Enabled command will turn off the blower if the status if input default to Inactive. Most command inputs will default to Inactive so enabling Purge Mode command will not have any affect until you set it to Active.

Overriding Sensor Values

There are two methods to override sensors. The first method applies to all sensors where the second method only apply to a few select sensors.

The unit also comes with a fallback solution in case there is a break in the BACnet communication interface. In this case all BMS controlled sensors will fall back and read sensor data from the unit installed sensors. For this to work you have to set the heartbeat timer (AV 515) to a value greater than 0.

Method 1

BACnet Analog Input objects support a property called Out Of Service. If you BACnet platform supports this property you can use it to take control over a sensor. Set Out Of Service to True and you will be able to write to that sensor. Sensor Present Value will no longer be updated by the built-in sensor.

Method 2

There are some dedicated Analog Values that can be used to overwrite some sensors. They are indicated in this document. For instance, AV 768 (Return Air Temp) that can be used to override AI 1 (Return Air Temperature).

Simply use this point to set the value. The Heartbeat timer feature still applies here so you need to update values within heartbeat timer interval or unit will fall back to built-in sensor.

Unit BACnet Configuration

This unit support 3 types of BACnet interfaces as listed below.

- BACnet IP
- BACnet over Ethernet
- BACnet MS/TP

Use the unit's user interface to make any BACnet configuration changes. From the top menu, select Advanced, Network and BACnet.

General BACnet Configuration

These settings apply to all interface types.

BACnet Enabled	You can configure unit to be a Readonly unit or Read/Write. Note that when unit is in Service mode, for safety reasons you can not write to all writeable points.
Interface	Select the interface you want to use. Note that when you set interface to BACnet IP, you also have to configure TCP/IP settings to change it to a static IP (unless this is done at router level).
Port	Default port is BAC0 (47808). Unit only support 16 different ports, BAC0 (47808) to BACF 47823).
Device ID	Support full range of device ids. Default is 150.
Max APDU Size	This parameter is automatically changed to match interface when interface is changed but can be overwritten. Note that you can not go higher than 480 for MS/TP since this is the max for MS/TP.

MS/TP BACnet Configuration

These settings only apply to MS/TP.

MS/TP MAC	The MS/TP MAC address.
MS/TP Serial Port	Port has to be set to Port D. This port is by default assigned to Unit Network. To disable it for the Unit Network, from the top menu select Advanced, Network and Unit Network. Find Port D Enabled and change it to No.
MS/TP Baud Rate	Baud rate of MS/TP network.
MS/TP Max Master Address	Recommended to set this to the max MAC address that will be used in network.
MS/TP Max Info Frames	Can be used for performance tuning. Number of info frames unit can send before passing on token. Default is 1.

MS/TP Usage Timeout	Another fine tuning parameter. Number of milliseconds unit will wait before considering that a token has been lost or device is not replying to a polling request. Default is 20.
MS/TP Postpone Reply	<p>Unit can handle request messages in two different ways. Either it will process request when received and reply right away or it will send a postpone message, pass on token and have the reply sent when receiving the token again and request fully processed.</p> <p>Choose the method that seems to be working the best.</p> <p>Default is to not postpone requests.</p>
WatchDog Reset Timer	<p>A feature that was introduced to handle an unknown bug in the MS/TP implementation where it could get into a state where it would not pass on the token and thereby lock up the MS/TP network.</p> <p>The WatchDog will discover that the token is not passed on when there are other devices on the network. This is detected within 1 second. The BACnet interface will then be disabled for a few seconds before being enabled again. This timer determines how long to wait before enabling interface again. Needs to be enough time so that another device will start a new token when it sees there are no further messages sent on the network. Default is 5 seconds.</p> <p>NOTE! There have been improvements to the code so the bug might no longer occur. The WatchDog feature is still maintained as a precaution.</p>
Logging Parameters	All the logging parameters are for troubleshooting purposes and should not be enabled unless supervised by the factory. To be useful the unit needs to be connected to the Web Monitoring server since this will be used to review the log data.

Part 1 - General

1. Scope

Furnish and install, where indicated, a factory-assembled, fully-enclosed, packaged environmental control system with energy recovery feature(s) designed for natatorium environment control

Features shall include:

- A. Dehumidification by means of a direct expansion evaporator coil
- B. Space heating by means of a packaged hot water coil
- C. Cooling mode with heat rejection to a fluid loop by means of a brazed plate heat exchanger
- D. Pool water heating from reclaimed compressor waste heat by means of a vented heat exchanger
- E. Integral minimum outdoor air connection

2. Quality and Safety Assurance

- A. The system shall be ETL listed
- B. The system shall be completely assembled, wired, piped, and test-run at the factory prior to shipping. All controls shall be factory adjusted to satisfy the design conditions.
- C. Manufacturer shall have a minimum of ten-plus years prior experience making similar equipment as described in this specification.
- D. Wherever possible, the system shall have a mechanical vestibule where the electrical panel, compressor(s), pool water heat exchanger(s), receiver(s) and most of the refrigeration controls are out of the process air stream
- E. Warranty: The entire system shall have a 24-month limited parts warranty from the factory ship date
 - 1. A 1-year labor warranty shall be provided by the manufacturer when the system is connected to the factory via an Internet monitoring system from the date of initial commissioning
- F. When connected to a network with Internet access, the system shall have remote service capability with the ability for field service technicians to receive service and trouble alerts by e-mail and make parameter adjustments via a browser interface on any Internet-capable device

Part 2 - Product

3. General

The natatorium control system shall include:

- A. Mechanical process dehumidification
- B. Indoor cabinet configuration
- C. Packaged fluid cooled condensing brazed plate heat exchanger for AC heat rejection
- D. A packaged hot water heating coil, sized as specified by the design engineer to meet the skin losses and outdoor air heating loads
- E. Potable water rated coaxial condensing heat exchanger(s) with double wall vented construction for pool water heating using reclaimed compressor waste heat
- F. Air filtration via MERV-8 2-inch pleated panel filters for return and outdoor air
- G. Minimum outdoor air connection
- H. A service vestibule where the compressor, refrigeration specialties, control valves and all electronics are outside of process air stream

4. Sequence of Operation

The system shall be designed and sized to maintain the specified space conditions

- A. System Startup
 - 1. Power is turned on or the system is restarted
 - 2. After a short initial delay to allow the sensors to stabilize, the blower starts and operates continuously
 - 3. Based on sensor feedback, the system shall begin or resume operation based on the sequence below
- B. Airside Configuration
 - 1. The system continuously delivers the specified supply air volume to the natatorium
 - 2. The minimum exhaust air volume is set to meet the engineer's schedule.
 - 3. The minimum outdoor air volume is set to meet the engineer's schedule.
- C. Dehumidification Mode
 - 1. The return air relative humidity is above the humidity setpoint
 - 2. Return air dewpoint is above dewpoint setpoint.
 - 3. The compressor enters the Compressor Start sequence
 - 4. Initially, 100% of compressor hot gas discharge will be diverted to condense at the air reheat coil. The supply air temperature will be higher than the return air temperature
 - 5. If the system cannot maintain the relative humidity below setpoint, the second compressor circuit will start
- D. Air Conditioning Mode
 - 1. The return air temperature is above the room temperature setpoint
 - 2. The compressor starts, if not already operating in Dehumidification Mode
 - 3. Excess compressor hot gas is diverted to a fluid-cooled brazed plate heat exchanger. Up to 100% of compressor heat is rejected into the fluid loop
 - 4. If the system cannot maintain the return air temperature setpoint, the second compressor will start
- E. Space Heating Mode
 - 1. The return air temperature is below the room temperature setpoint
 - 2. The microprocessor space heating output signal (0-10 volts) is sent to the heating coil controller. The signal output will regulate based on the return air temperature
- F. Pool Water Heating Mode

1. The return pool water temperature is below the pool water setpoint
 2. If the compressor is already operating due to a Dehumidification or Air Conditioning demand, the control valves will divert the compressor hot gas through the coaxial heat exchanger to heat the pool water, with the remainder rejected at the air reheat coil or the AC heat exchanger
 3. If there is no pre-existing demand for the compressor to operate, the microprocessor sends a signal to the auxiliary pool water heater (remote by others) to operate. The compressor will not operate solely for a pool water heating demand unless specifically configured to do so at the controller
- G. Freeze Protection
1. The supply air temperature falls below the freezestat setpoint
 2. Exhaust fan(s) are stopped and outdoor air damper(s) are fully closed
 3. When the freezestat alarm is tripped, it must be manually cleared by the operator
5. **Cabinet**
- A. Cabinet Construction: All cabinet 16, 20 and 24 gauge sheet metal shall be galvanized G90 steel or Galvalume™ alloy with mill-applied zinc phosphate primer followed by an exterior grade white silicone modified polyester top coat. The sheet metal is engineered to form a cabinet with maximum strength and rigidity. All seams shall be caulked with silicone to prevent air and water leakage or infiltration
1. The cabinet floor shall be of 2-inch double-wall construction using 20-gauge pre-painted steel engineered with structural bends for maximum rigidity, mechanically fastened to the base frame
 2. The cabinets shall be mechanically assembled with stainless steel 5/32" sealed blind rivets. Where bolts are required bright zinc plated bolts shall be used
- B. Outdoor Air Intake:
1. Minimum Outdoor Air connection: motorized damper, filter and time clock
- C. Insulation: The unit shall be insulated per the following standards:
1. Fire resistant rating to conform to NFPA Standard 90A and 90B
- D. Cabinet configuration shall include:
1. A filter rack with separate access doors shall be provided for the return air and minimum outdoor air streams
 2. Unit shall be equipped with duct collars to admit the minimum outdoor air as scheduled. The outdoor air intake assembly shall have a built in air filter rack with separate access door, manual air balancing device and motorized 2 position extruded aluminum, Insulated, silicone side-sealed damper operated by 24-hour time clock
 3. Mechanical vestibule: The unit shall have the compressor, receiver, solenoid valves and the electrical panel in a separate compartment out of the processed air stream. All components shall be serviceable while the unit is in operation without disturbing the airflow
 4. Electrical panel: The unit shall have a built-in electrical control panel in a separate compartment in order not to disturb the airflow within the dehumidifier during electrical servicing. All electrical components shall be mounted on a 16 gauge galvanized sub-panel
6. **Filters**
- Wherever possible, air filters shall be standard sized, replaceable, off-the-shelf filters including:
- A. Return Air: 2-Inch MERV 8, 30% pleated filters with rust-free non-metallic structure on a slide in rack
 - B. Outside Air: 2-Inch MERV 8, 30% pleated filters with rust-free non-metallic structure
7. **Coils**
- A. Evaporator/dehumidifier coils shall be designed for maximum moisture removal capacity
1. Coils shall be fully dipped and coated with a polyester/enamel coating for maximum corrosion protection. Coating shall comply with ASTM B117/D1654 and ASTM D2126 for corrosion resistance against common acids, salt and gases
 2. Coil shall have galvanized casing and end plates
 3. Aluminum fin and copper tubes mechanically bonded to assure high heat transfer.

- B. Air reheat condenser coils shall be sized for variable heat transfer into the air with a capacity of 100% of the compressors total required heat of rejection
1. Coils shall be fully dipped and coated with a polyester/enamel coating for maximum corrosion protection. Coating shall comply with ASTM B117/D1654 and ASTM D2126 for corrosion resistance against common acids, salt and gases
 2. Coil shall have galvanized casing and end plates
 3. Aluminum fin and copper tube joints mechanically bonded to assure high heat transfer
8. **Drain Pans**
Each evaporator coil shall be provided with a positive draining, compound-sloped, baked powder paint coated aluminum drain pan with fully-welded corners to ensure zero water retention
9. **Blowers and Blower Motors**
- A. Supply blowers:
1. Each supply blower shall be an impeller plenum fan complete with backward curved, three-dimensional, profiled blades made of a high-performance composite material directly driven via a direct current (DC) electronic commuted (EC) motor. The blower and motor shall be completely corrosion resistant and be maintenance free. The EC-Motor shall be of zero-slippage design with continuously variable speed control when connected to the system's controller.
 2. Each EC motor shall have maintenance-free electronic circuitry, a rotor with permanent magnets, and an integral controller to provide the windings with electrical current so that, the motor rotates continuously and quietly.
 3. Each fan shall be statically and dynamically balanced on precision electronic balancers.
- B. Exhaust blowers:
1. The remote (by others) exhaust blower (EF1) shall be sized to maintain the negative pressure requirement in the space during normal operation and interlocked to the system's occupancy scheduler
10. **Dampers**
Internal dampers shall be made from extruded anodized aluminum with a parallel blade configuration and neoprene double-seal tips to minimize leakage. Damper blades shall be mounted on steel rods which rotate on nylon bushings. All damper hardware shall be corrosion resistant
- A. The system shall be provided with normally closed outside air and exhaust air dampers equipped with spring-return actuators The dampers adjust between 0% to 100% open position.
- B. The outdoor air and exhaust air dampers shall be of opposed blade configuration. Dampers shall have 0.750-inch insulated blades made from extruded anodized aluminum with neoprene double-seal tips to minimize leakage. Damper leakage shall be less than 1% of maximum flow at 4-inch water column differential. Damper blades shall be mounted on steel rods which rotate on nylon bushings. All damper hardware shall be corrosion resistant
11. **Pool Water Heater**
Potable water rated coaxial heat exchanger shall be double-wall vented construction with corrosion-resistant cupro-nickel water circuit tubing
- A. Self-purging and self-draining counter flow design
- B. Water circuit piping shall consist of transparent braided PVC hose
- C. Terminating connections are PVC schedule 40 NPT fittings located at the cabinet wall for easy connection
- D. The maximum loop operating pressure is 60 psig
12. **Compressors**
- A. Hermetic, scroll action compressor, suction gas cooled, suitable for refrigerant R-410A
- B. The compressor(s) shall be equipped with an internal solid-state thermal protection sensor
- C. Access: Service access valves for convenient servicing.
- D. The compressor(s) shall be mounted on rubber-in-shear isolators to limit the transmission of noise and vibration
- E. The compressor(s) shall be equipped with removable crankcase heater(s) for liquid migration protection
- F. The compressor(s) shall be located outside the conditioned air stream in the system's service vestibule

G. The compressor manufacturer must have a wholesale outlet for replacement parts in the nearest major city

13. Refrigeration Circuit

- A. The system shall consist of two factory sealed refrigeration circuits for dehumidification and sensible cooling. No site refrigeration work shall be required
- B. Each refrigeration circuit shall have pressure transducers monitoring the refrigerant discharge (high) and suction (low) pressures. The refrigeration circuit shall be accessible for diagnostics, adjustment and servicing without the need for service manifold gauges
- C. All refrigeration circuits shall have solenoid control valves, check valves, a liquid line filter-drier, liquid and moisture indicator, thermostatic expansion valve and a pump down solenoid valve
- D. The system shall have an externally adjustable balanced port design mechanical thermostatic expansion valve. The valve shall have a removable power head
- E. Tamper proof, hermetically sealed non-adjustable high and low pressure switches and refrigeration service valves shall be installed using Schrader type valves. Refrigeration service valves shall be located outside of the airstream
- F. The receiver shall have two refrigerant level (maximum and minimum) indicating sight glasses
- G. The suction line shall be fully insulated with 0.500-inch closed cell insulation

14. Control Panel

- A. The electrical contractor shall be responsible for external power wiring and disconnect switch fusing. Power block terminals shall be provided
- B. Main control panel shall be mounted inside the service vestibule outside of the process air stream
- C. Blower motors shall be protected with thermal trip overloads
- D. The system shall have a voltage monitor with phase protection
- E. Available dry contacts shall include:
 - 1. Alarm
 - 2. Blower interlock
 - 3. Stage 1 & 2 heating
 - 4. Outdoor air damper control
 - 5. Remote exhaust fan #1
 - 6. Remote exhaust fan #2
 - 7. Outdoor-air cooled equipment
 - 8. System on
 - 9. Auxiliary pool heater 1
 - 10. Heat recovery
- F. Terminals shall be provided to send 24-volt power to the outdoor air cooled condenser or fluid cooler fan contactor
- G. All wiring shall be installed in accordance with UL or CSA safety electrical code regulations and shall be in accordance with the NFPA All components used in the system shall be UL or CSA listed
- H. Wiring diagrams shall be located near the electrical panel(s) on the system. These diagrams shall provide colour-coding and wire numbering for easy troubleshooting. All wires shall be contained in a wire duct.
- I. The compressor(s) shall have a time delay on start to prevent short cycling
- J. An airflow switch and a dry contact for alarm(s) shall be provided

15. Auxiliary Air Heating

The packaged hot water coil shall be sized to meet the scheduled heating capacity and have the following characteristics:

- A. Modulating (0-10V) auxiliary air heat control by means of a factory mounted and wired three-way control valve
- B. Auxiliary air heating coil tubes, fins, headers, casing and end-plates shall be fully protected by a polyester/enamel coating for maximum corrosion protection. The protective coating shall comply with ASTM B117/D1654 and ASTM D2126 for corrosion resistance against common acids, salts and gases

- C. Coil casing and end-plates shall be made of galvanized steel
- D. Fin and tube joints shall be mechanically bonded to ensure high heat transfer
- E. Fins shall be made of aluminum
- F. Tubes shall be made of copper

16. Air Conditioning

Water-cooled air conditioning

- A. The system shall be equipped with an air conditioning mode where all excess compressor heat is rejected to a fluid loop. The fluid cooled heat exchangers shall be capable of rejecting 100% of the compressor heat to the water loop at summer design conditions. The heat exchanger shall be a corrosion resistant, stainless steel brazed plate-type heat exchanger with counter flow design. The heat exchanger shall be UL or CSA listed and comply with BOCA code P.1505.12.2
- B. Each refrigeration circuit shall include refrigerant valves, a receiver with pressure relief valve set at 650 psig, pressure control valve and pressure differential valve
- C. Maximum fluid loop operating pressure: 250 psig

17. Factory Performance Testing

- A. The system shall be thoroughly tested under factory test conditions.

Part 3 - Execution

18. Product Delivery, Acceptance, Storage and Handling

- A. Perform a thorough physical inspection of the system upon delivery from the shipment carrier
- B. Identify and immediately report any physical damage to manufacturer
- C. If the system is to be stored prior to installation, store in a clean, dry place protected from weather, dirt, fumes, water, construction and physical damage
- D. Handle the system carefully during installation to prevent damage
- E. Damaged systems or components shall not be installed. Contact the manufacturer for RMA instructions
- F. Comply with the manufacturer's rigging and installation instructions for unloading the system and moving it into position

19. Connections

- A. Where installing piping adjacent to the system, allow space for service and maintenance
- B. Duct connections: drawings indicate the general arrangements of the ducts. Connect the system to ducts with flexible duct connectors. Comply with code requirements for flexible duct connectors
- C. Electrical connections: comply with code requirements for power wiring, switches and motor controls in electrical sections

20. Installation

The agency responsible for start-up should work in accordance with the specifications and in accordance with the manufacturer's instructions and only by workers experienced in this type of work

21. Start Up

- A. Detailed instructions for start up as provided by the manufacturer must be followed
- B. Installing contractor must contact the manufacturer prior to start up to confirm start up procedures
- C. Remote Internet access and control must be initiated and confirmed by the factory prior to start up for extended labor warranty to be in effect

General Policy

This warranty applies to the original equipment owner and is not transferable. Dectron warrants as set forth and for the time periods shown below that it will furnish, through a Dectron authorized installing contractor or service organization, a new or rebuilt part for a factory installed part which has failed because of a defect in workmanship or material.

Warranty Void Unless Registered

Warranty is void unless, upon start-up of the unit, the "Warranty Registration and Start-up Report" is completed and sent to the factory within one week of initial start-up. This report will also register the compressor warranty with the compressor manufacturer.

Initial 90-day Warranty

During the first 90 days from initial start-up and prior to the completion of the 24th month from date of shipment, whichever comes first and **subject to prior written approval from the factory**, Dectron will provide and/or reimburse the required labor, materials, and shipping and handling costs incurred in the replacement or repair of a factory installed defective part. The labor required to replace the defective part is warranted. Travel time, diagnostic time, per diems, truck charges, etc. are not covered under this warranty.

Vision 2.0 Conditional One Year Extended Labor Warranty

The initial 90-day warranty shall be extended for a total of 12 months from initial start-up and prior to the completion of the 24th month from date of shipment, whichever comes first and **subject to prior written approval from the factory**. The provided equipment must be connected and communicating to Dectron's Vision 2.0 online control and monitoring service from start-up for the entire term of the warranty extension. Dectron will provide and/or reimburse the required labor, materials, and shipping and handling costs incurred in the replacement or repair of a factory installed defective part. The labor required to replace the defective part is under warranty. Travel time, diagnostic time, per diems, truck charges, etc. are not covered under this warranty.

Two Year Parts Warranty

If any factory installed part supplied by Dectron fails because of a defect in workmanship or material prior to the completion of the 24th month from date of shipment, Dectron will furnish a new or rebuilt part F.O.B. factory. No labor reimbursement will be made for expenses incurred in making field adjustments or parts replacement outside the Initial 90-day Warranty. Dectron reserves the right to have the defective part returned to the factory in order to determine the warranty applicability. Parts shipping and handling costs (to and from the factory) are not covered outside of the Initial 90-day Warranty.

Replacement Part Warranty

If a replacement part provided by Dectron under this warranty fails due to a material defect prior to the end of the Two Year Parts Warranty (or the end of the extended warranty period if applicable) or 12 months from date of the replacement part shipment, whichever comes first, Dectron will furnish a new or rebuilt part F.O.B. factory.

Applicability

This warranty is applicable only to products that are purchased and installed in the United States and Canada. This warranty is NOT applicable to:

1. Products that have become defective or damaged as a result of the use of a contaminated water circuit or operation at abnormal water temperatures and/or flow rates.
2. Parts that wear out due to normal usage, such as air filters, belts and fuses. Refrigerant lost during the parts warranty will be reimbursed in accordance to the current market price of refrigerant at the time of repair. Dectron will not be responsible for refrigerant lost from the system due to improperly installed contractor piping to the remote outdoor air cooled condenser.
3. Refrigerant coils that corrode due to improperly balanced pool chemistry or corrosive air quality.
4. Components that have been relocated from their original placement at the factory.
5. Any portion of the system not supplied by Dectron
6. Products on which the model and/or serial number plates have been removed or defaced.
7. Products which have become defective or damaged as a result of unauthorized opening of refrigeration circuit, improper wiring, electrical supply characteristics, poor maintenance, accidents, transportation, misuse, abuse, fire, flood, alteration and/or misapplication of the product.
8. Products not installed, operated and maintained as per Dectron Owner's Manual.
9. Products on which payment is in default.

Limitations

This warranty is given in lieu of all other warranties. Anything in the warranty notwithstanding, any implied warranties of fitness for particular purpose and merchantability shall be limited to the duration of the express warranty. Manufacturer expressly disclaims and excludes any liability for consequential or incidental damage for breach of any express or implied warranty.

Where a jurisdiction does not allow limitations or exclusions in a warranty, the foregoing limitations and exclusions shall not apply to the extent of the legislation, however, in such case the balance of the above warranty shall remain in full force and effect.

This warranty gives specific legal rights. Other rights may vary according to local legislation.

Force Majeure

Dectron will not be liable for delay or failure to provide warranty service due to government restrictions or restraints, war, strikes, material shortages, acts of God or other causes beyond Dectron control.

Optional Extended Warranties

The following extended warranties are available to purchase before the shipment of the unit:

- Extended Five Year Compressor Warranty
- Extended Five Year Airside Coil Warranty
- Extended 10 Year Airside Coil Warranty
- Extended Five Year Driveline Warranty



EAST LOOKING SOUTH



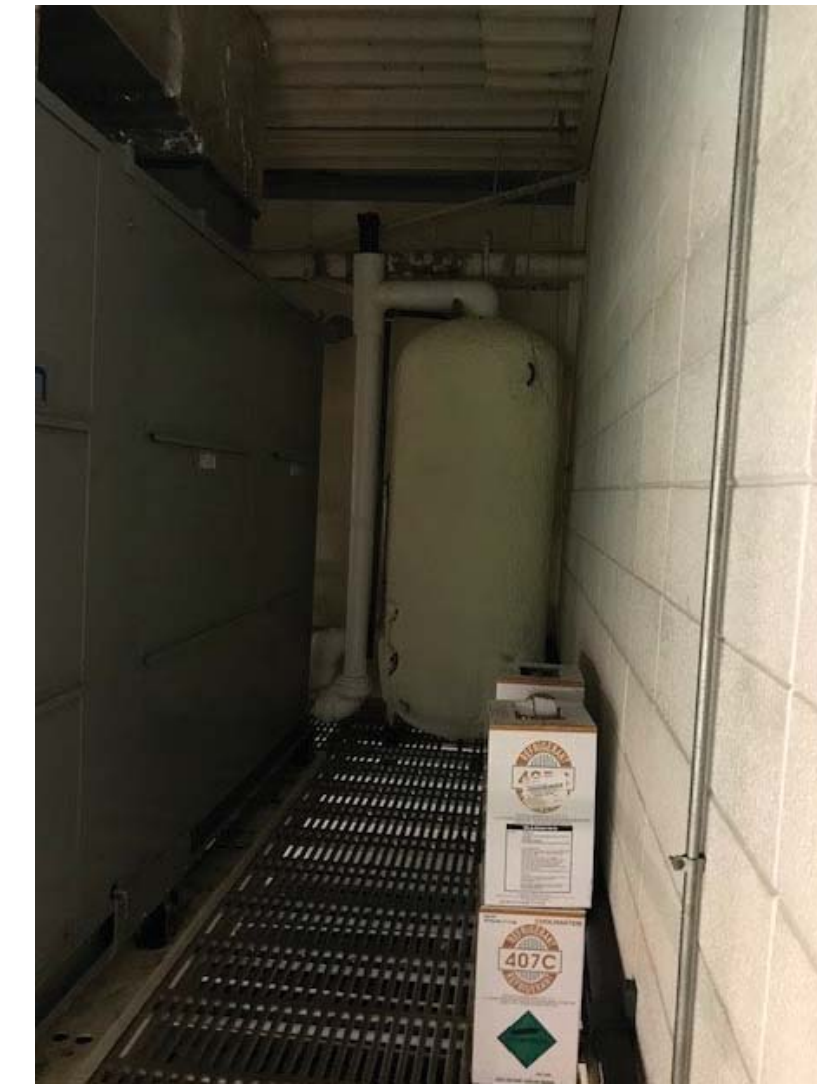
EAST LOOKING SOUTH



EAST LOOKING SOUTH



NORTH END OF PLATFORM



WEST LOOKING SOUTH



WEST LOOKING SOUTH



SOUTH END LOOKING EAST



EAST LOOKING NORTH



EAST SIDE LOOKING NORTH



NORTH SIDE LOOKING EAST



CONDENSATION PROBLEM UNDER OA DUCT

REINSULATE AROUND OUTSIDE AIR INTAKE AND DUCT TO CONTROL CONDENSATION ISSUES



UNDER DECK

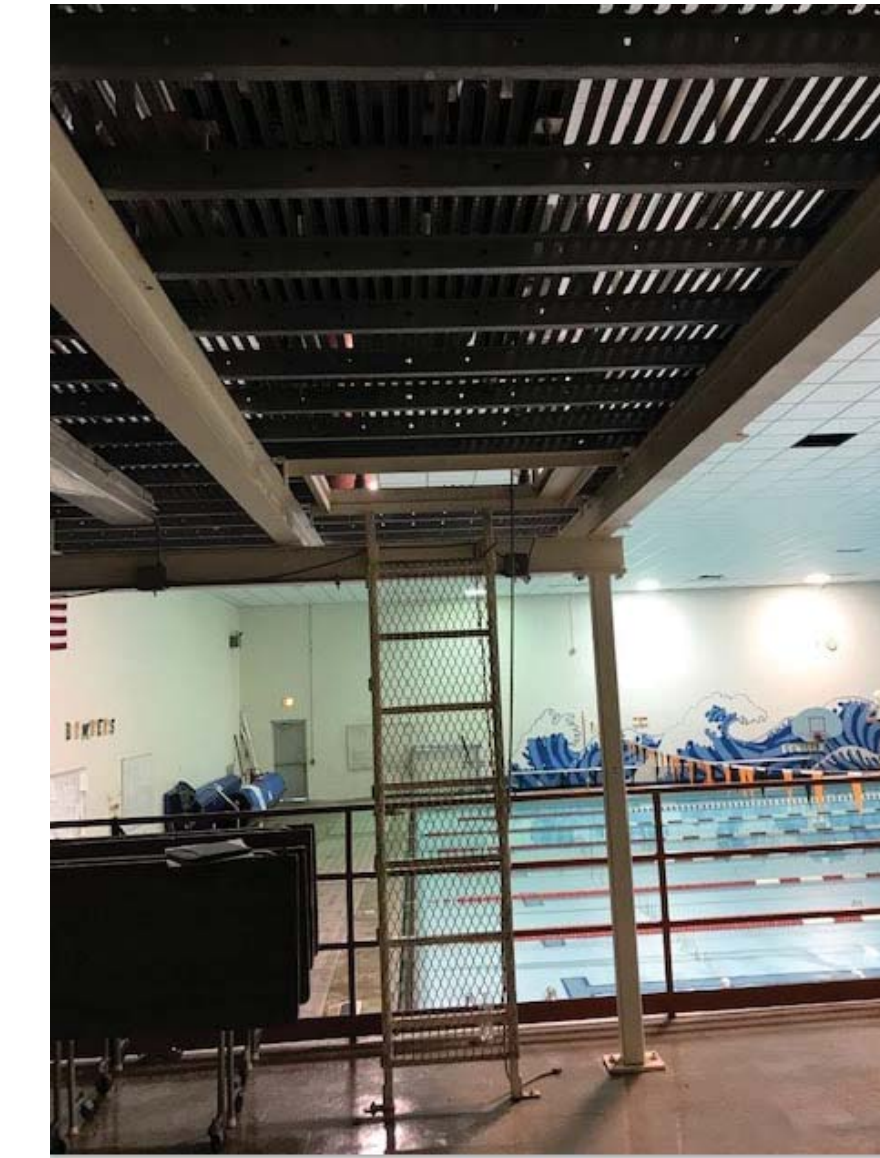
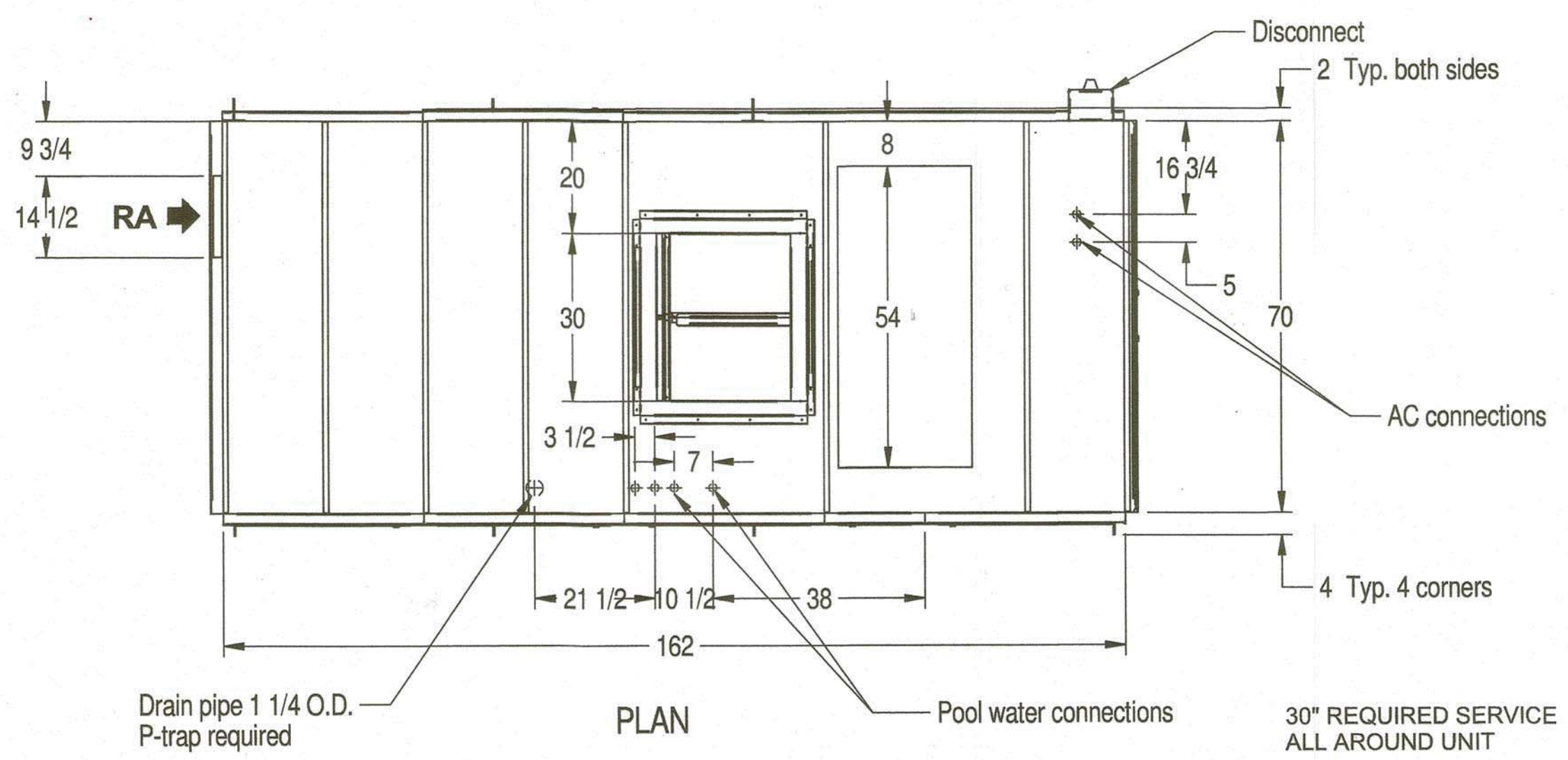


PHOTO GALLERY

Table with 2 columns: NO., DATE, REVISIONS, REMARKS

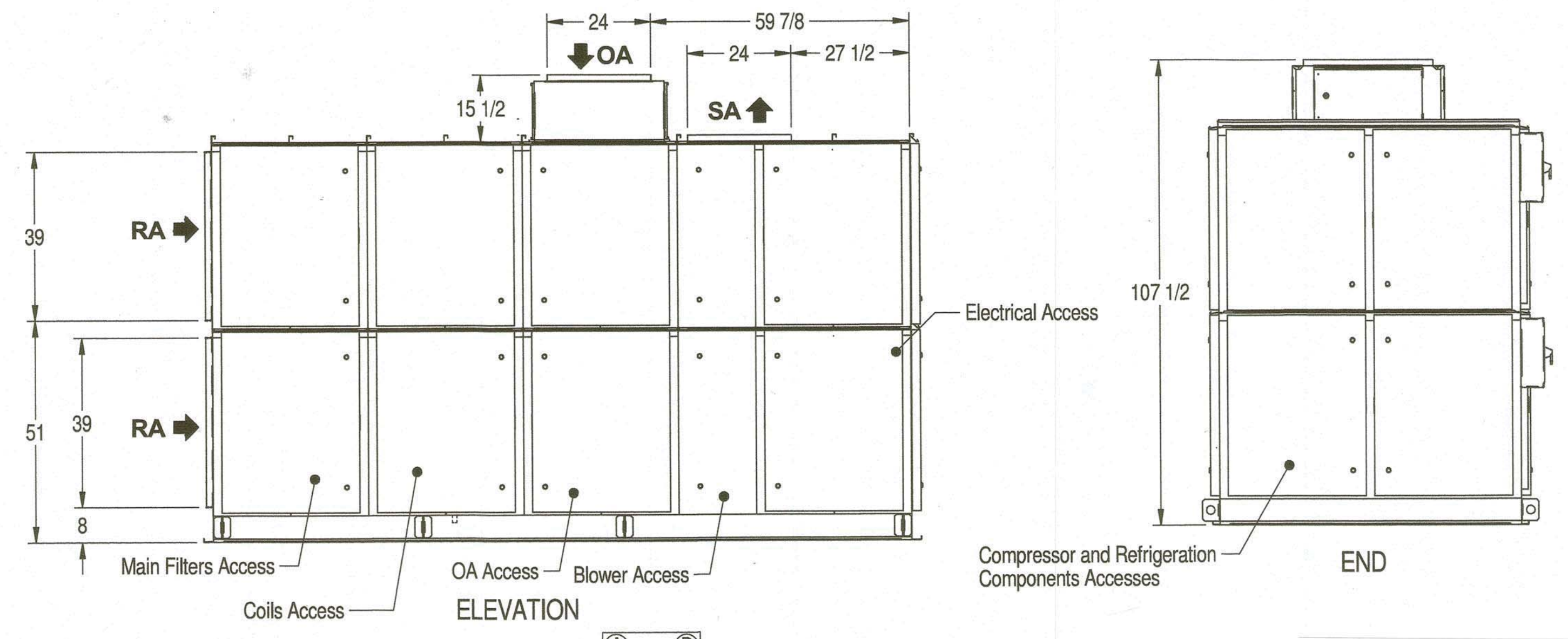
PROJECT NO. 25420220 ISSUE DATE

SHEET M-2 OF SHEETS



Dectron
 DESCRIPTION: MODEL: DS/DA5 Double wall
 040/050/060/070/080/082/102

CAD FILE: 2BI-S-HT-SIE0P0 TOA 2xDG
 DATE: 07/21/20 REV: 0
 DRAWN BY: groberts SHEET: 1 OF 1

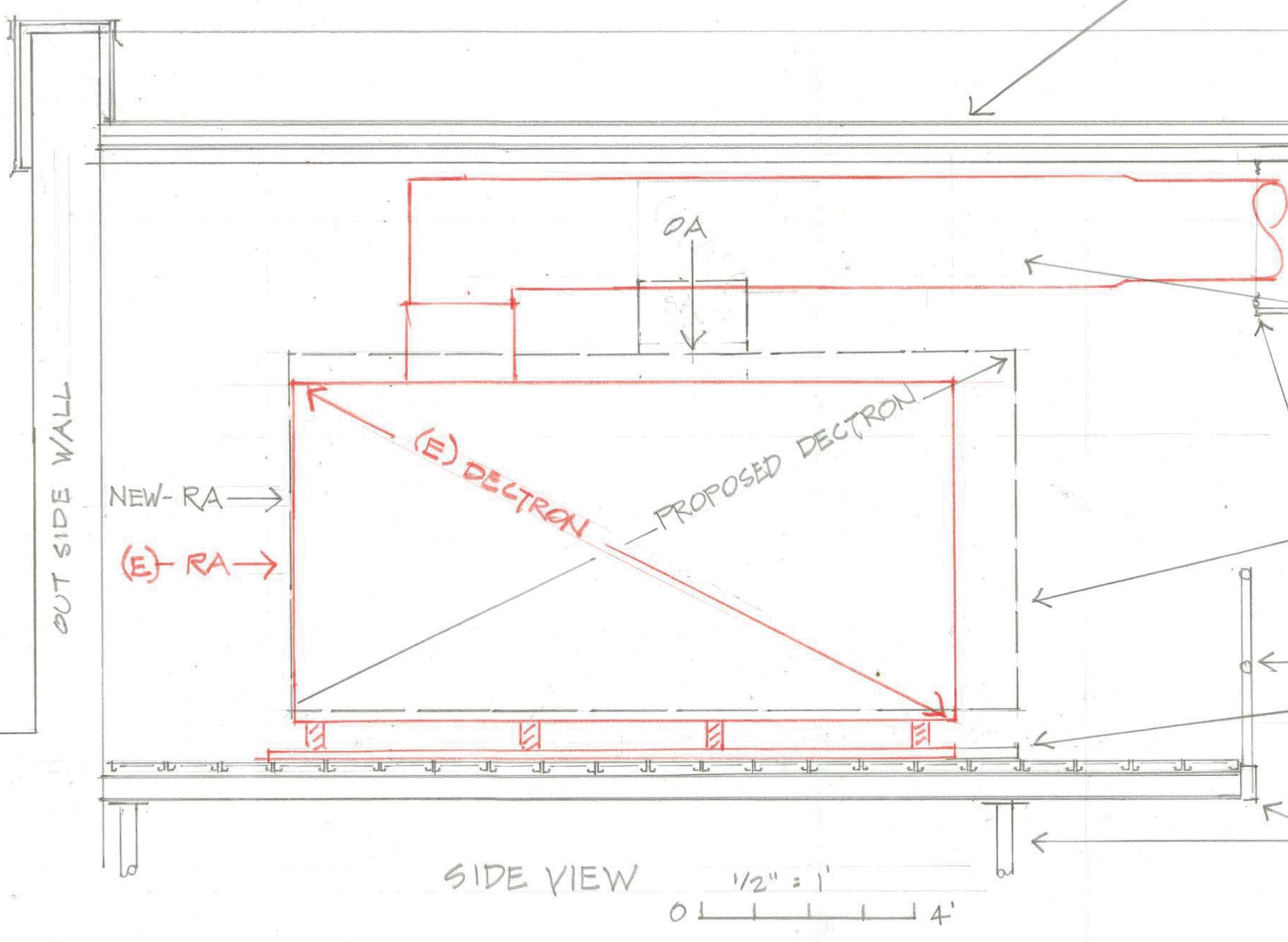


UNIT OPERATING WEIGHT: 6600 LBS (A=20%, B=30%, C=30% & D=20%)

(A)	(B)
(D)	(C)

Contractor shall inspect existing conditions. A removable area of decking approximately 100" E-W x 179" N-S is in place. Carefully remove roofing to access, keep moisture out of system. Remove decking and salvage for reuse or replace with equal Type N 3" galvanized decking. When staging salvaged decking on roof put down protection to avoid damage to in place roof. When new unit is set, replace decking re-anchoring at every flute. Replace roof system over. Roof is Carlisle Warranty CMD 1150475, Adhered Densdeck gyp board, adhered vapor barrier, adhered scrim face Carlisle urethane insulation board, multi-layer, 2.5" and 2" (always verify) then 60 mil adhered Carlisle EPDM.

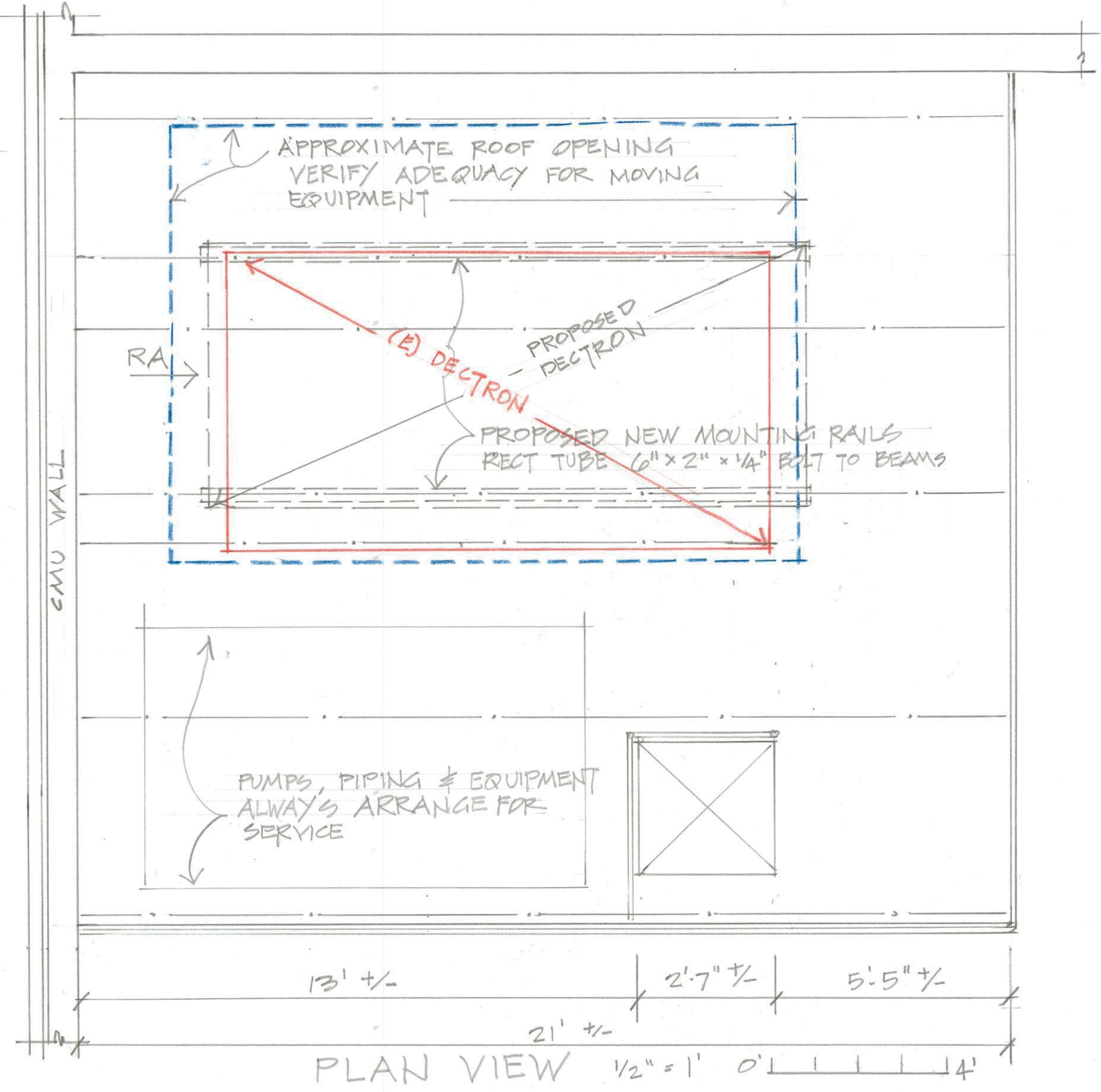
- Supply air, Outside air, reconfigure and reconnect at Dectron and provide transition connections. Duct to be insulated with 2" wrap and vapor tight wrap.
- Perimeter ceiling edge, add tie wires at 4' spacing to properly secure grid level and rigid.
- New Dectron is different width than old Dectron, but existing deck structure should accommodate, always verify condition, provide new structural support if repositioning is required.
- (E) Removable handrail
- Replace unit under-rail supports, (E) are to short, with new 2" x 6" x 1/2" rectangular steel tube rails full length. Shop prime and finish, Match existing rails for cope and bolt down to structure.
- (E) deck and structure.



PROJECT NOTES

Contractor to provide all labor and materials for all necessary demolition and to replace equipment and make systems properly operable, including but not limited to:

- Open roof and deck for access, equipment removal and replacement, Carlisle Warranty CMD 1150475, open roof and deck when done reinstall roof system with vapor barrier. Adhered Densdeck gyp board, self adhered vapor barrier SureMD 70 SA, lap and seal integral with existing, adhered scrim face Carlisle urethane insulation board, multi-layer, 2.5" and 2" (always verify) then 60 mil adhered Carlisle EPDM. Existing decking may be reinstalled if properly removed and stored for reinstall. Replace if necessary, type N 3" x 16 gauge, secure at every flute with #14 screws, 2 per flute.
- Disconnect existing Dectron and associated equipment, isolate pool loop and Geothermal loop.
- Disconnect control and power wiring
- Disconnect condenser supply and return piping at unit.
- Disconnect and remove all power wiring, control wiring, piping, duct work, hung from deck and as need to rig and remove existing unit from support platform through opening in roof.
- Disconnect and remove as needed supply and outside air duct work.
- Isolate, drain, disconnect and modify pool water loop to accommodate removal and replacement.
- Modify condenser piping arrangement to accommodate removal and replacement.
- Remove and modify power wiring, disconnect location, switch location motor controllers and all electrical as needed to accommodate removal and replacement. This includes verifying circuit sizing and breaker/fuse sizing to meet requirements of the new Dectron unit and associated pumps, fans and accessories.
- Make adjustments to platform support and support rails to accommodate new equipment.
- Set and install new Dectron, including reconnecting all duct and air distribution systems, supply and outside air, connect power and controls.
- Insulate all lines similar to existing 2" wrap with vapor tight cover sealed seams.
- Inspect and correct insulation wrap on the outside air that has condensation problems currently.
- Dectron unit will have on board controls to be integrated with existing ECSI (Peoria Office) BAS system to monitor functions and to be able to set temperatures and humidity through the BAS.
- Run start up procedures, verify proper operation of all systems, integrated operation of all cycles, heating, cooling, geo thermal, heating pool water, fresh air and fresh air heat recovery operation.
- Instructions and training, provide on site training on operations thoroughly explaining settings, operations, service and maintenance.
 - Full training at startup and turn over.
 - Two additional half day trainings to be scheduled at Owner request, at approximately 3 months and 6 months.
- Warranty on all new installations two years' service on system new and including parts and labor, but existing parts such as pumps, heat recovery coil, piping not disturbed by these operations are not included.



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 middletonassociates.net

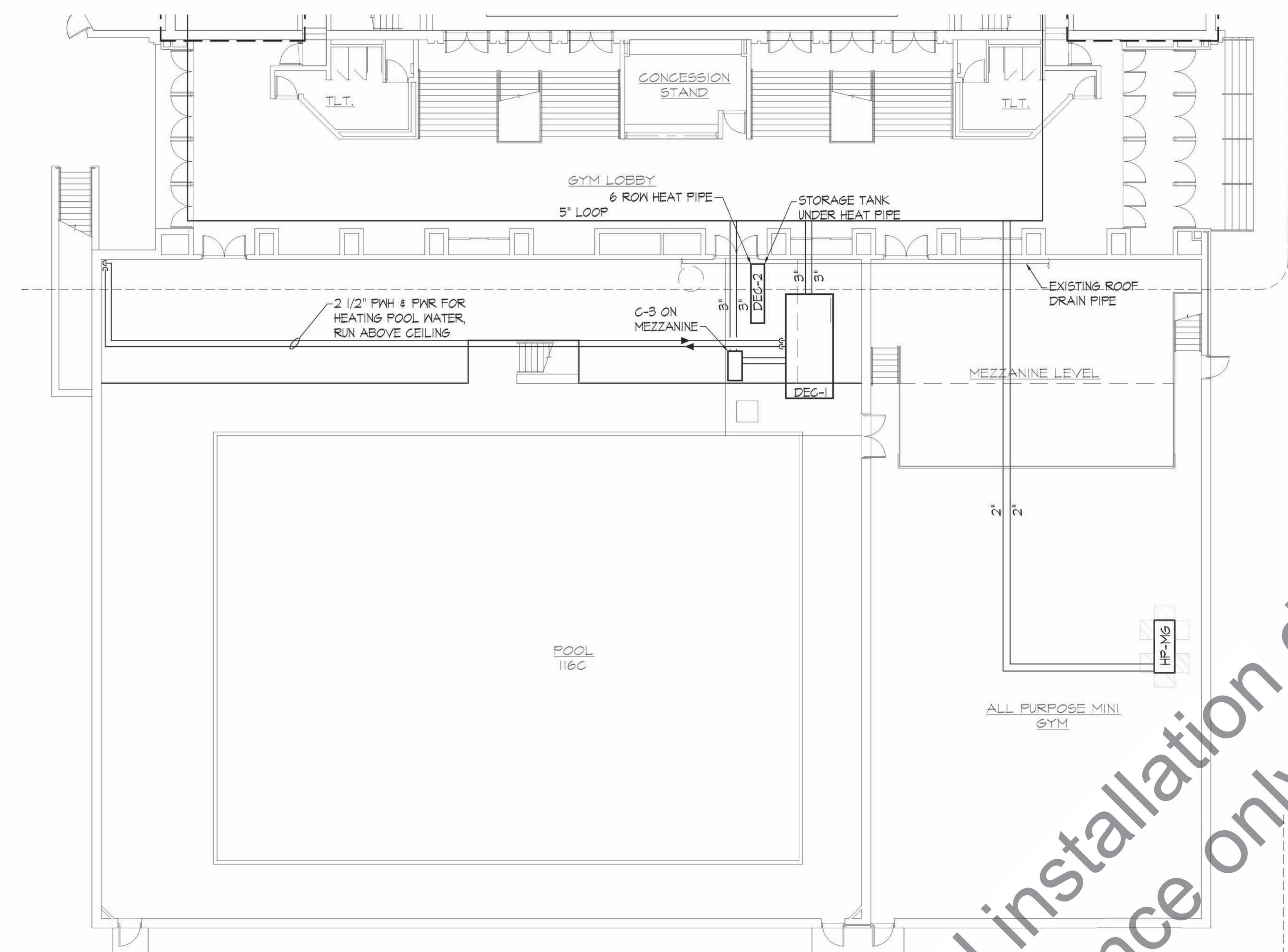
MIDDLETON ASSOCIATES INC ARCHITECTS

THE CONTRACTOR SHALL VERIFY CONDITIONS & DIMENSIONS ON THE JOB INFORMATION SHOWN ON ANY PART OF THE DRAWINGS SHALL APPLY TO SIMILAR CONDITIONS AT OTHER LOCATIONS IN THE WORK UNLESS SET FORTH OTHERWISE

2021 DECTRON REPLACEMENT
 at Macomb Jr. Sr. High School - 1525 S. Johnson St. Macomb, IL 61455
MACOMB COMMUNITY UNIT SCHOOL DISTRICT 185
 323 W. WASHINGTON STREET
 MACOMB, IL 61455

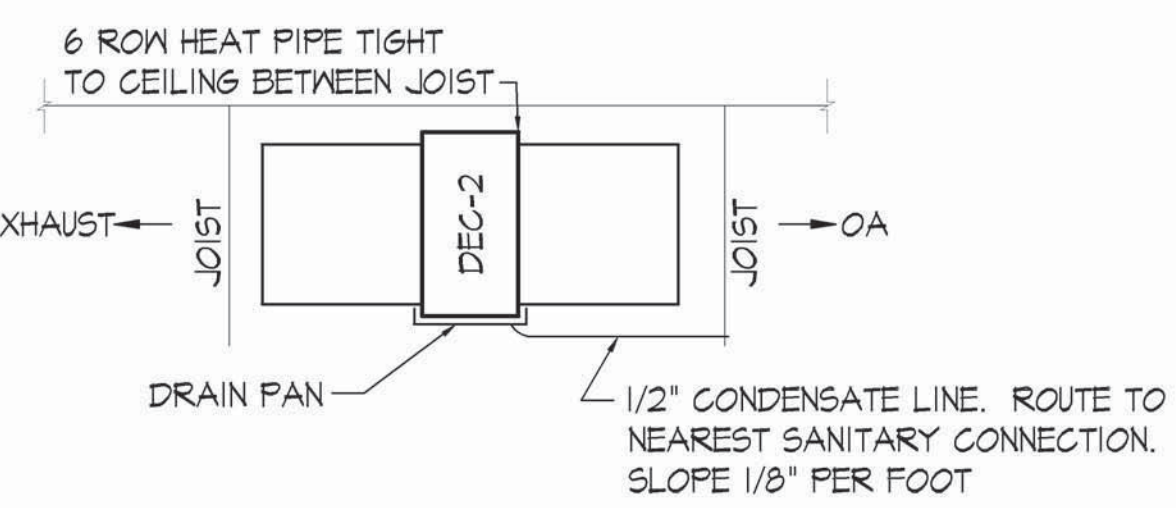
NO.	DATE	REVISIONS	REMARKS

PROJECT NO. 25420220
 ISSUE DATE 7-26-2021
 SHEET 1
 OF 1 SHEETS



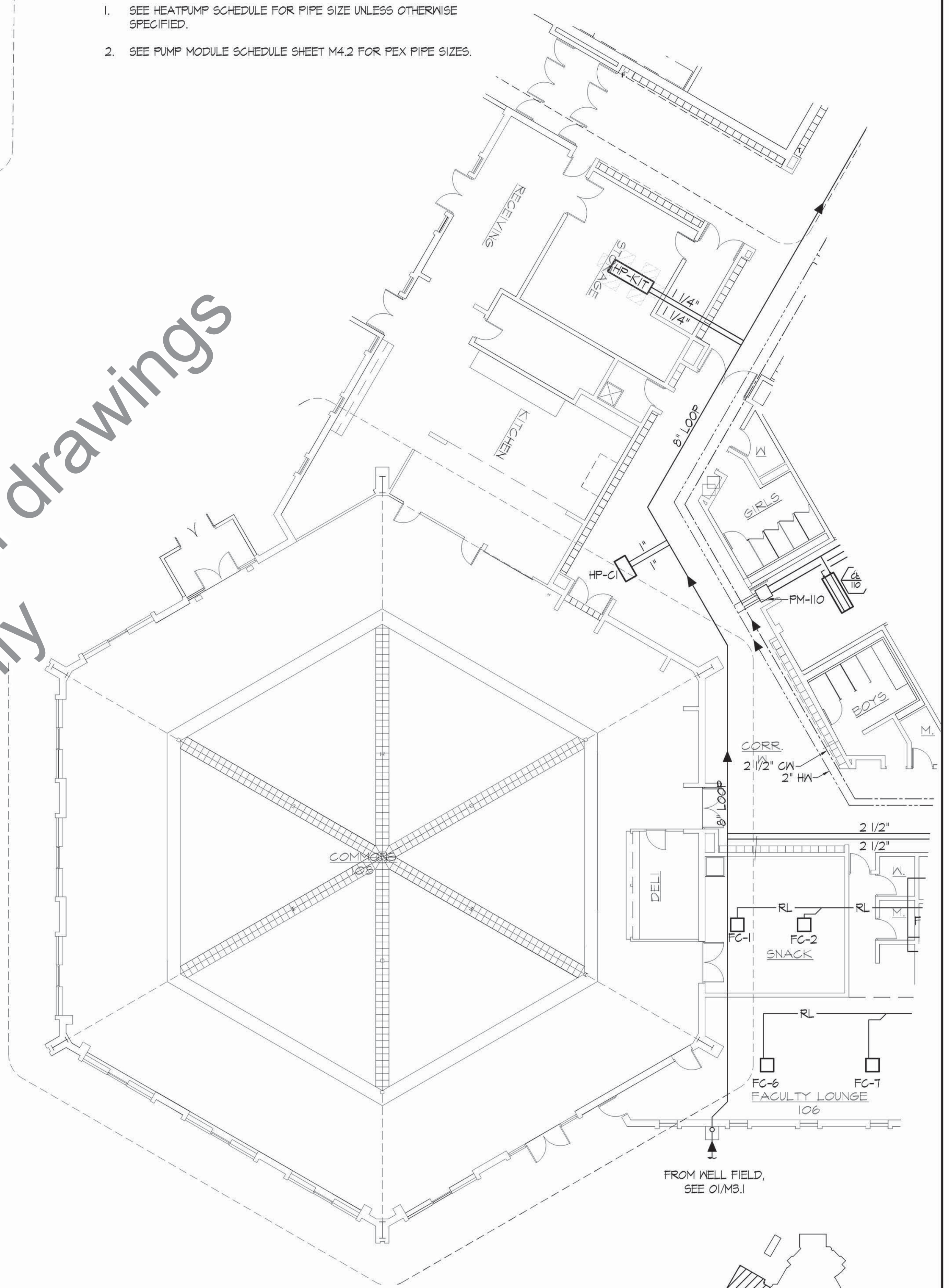
PHASE I
02 MECH. PIPING POOL FLOOR PLAN
 SCALE: 1"=10'-0"

KEYED NOTES:
 ① TIE INTO EXISTING SUPPLY TO POOL HEATERS AND ROUTE TO DEC-1. THEN RETURN PREHEATED WATER SUPPLY LINE TO HEATER. FIELD COORDINATE TIE IN POINT.

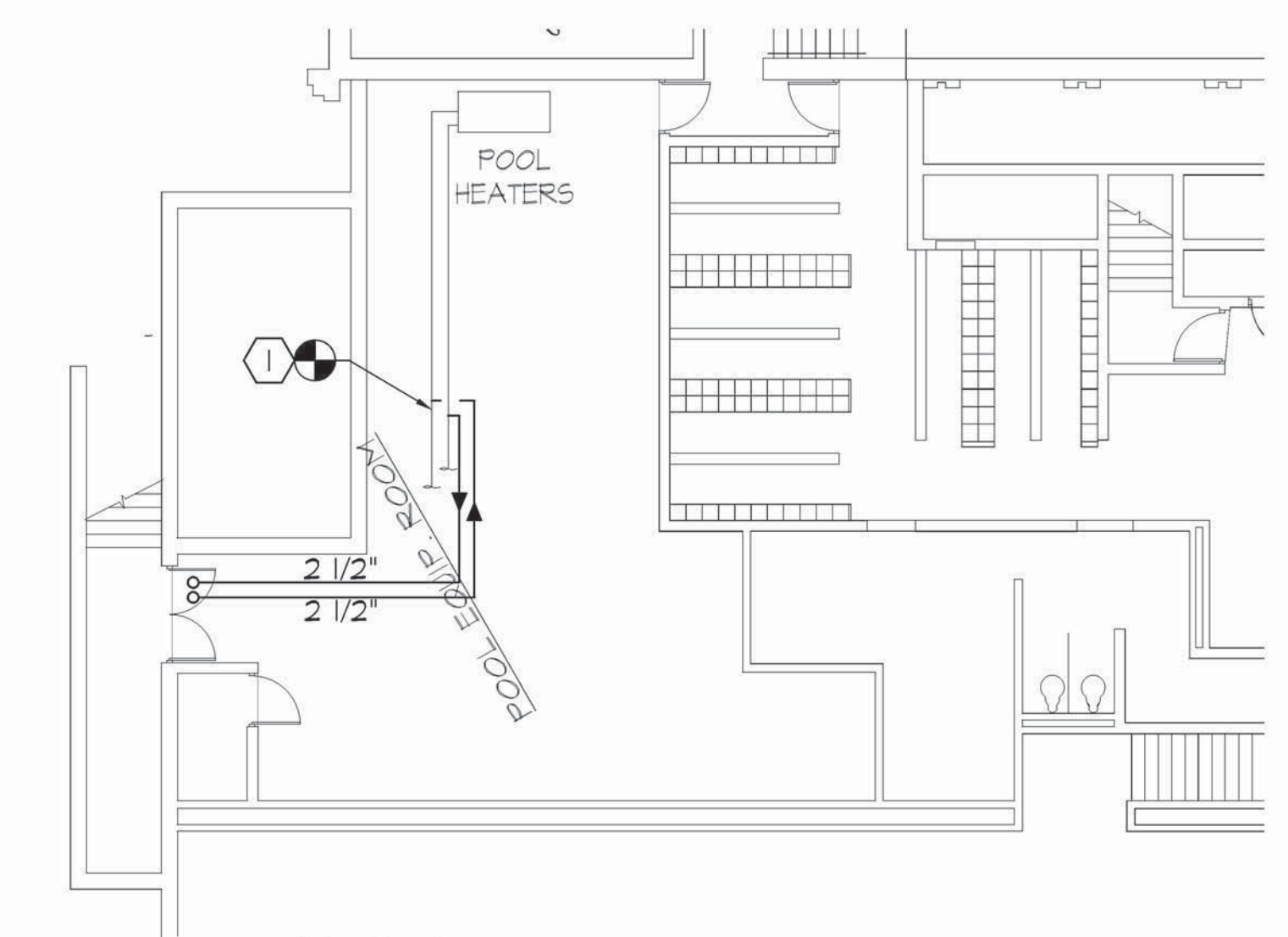


PHASE I
03 6 PIPE COIL CONDENSATE DRAIN DETAIL
 SCALE: 1/2"=1'-0"

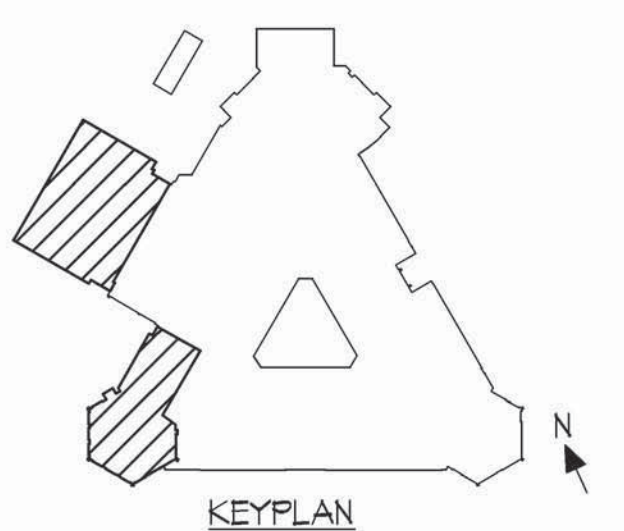
GENERAL NOTES:
 1. SEE HEATPUMP SCHEDULE FOR PIPE SIZE UNLESS OTHERWISE SPECIFIED.
 2. SEE PUMP MODULE SCHEDULE SHEET M4.2 FOR PEX PIPE SIZES.



PHASE I
01 MECH. PIPING COMMONS FLOOR PLAN
 SCALE: 1"=10'-0"



PHASE I
04 MECH. PIPING POOL EQUIP. ROOM
 SCALE: 1"=10'-0"

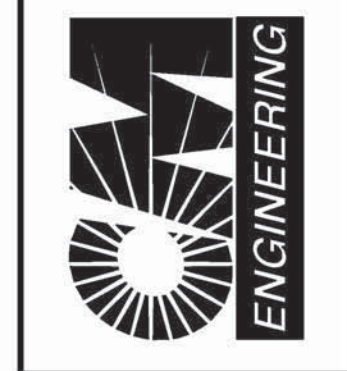


Original installation drawings
for reference only

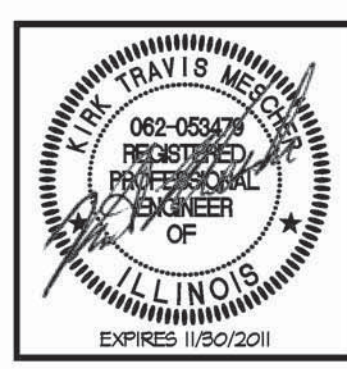
1702 W. College Ave.
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MIDDLETON ASSOCIATES, INC ARCHITECTS
 THE CONTRACTOR SHALL VERIFY CONDITIONS & DIMENSIONS ON THE JOB. INFORMATION SHOWN ON ANY PART OF THE DRAWINGS SHALL APPLY TO SIMILAR CONDITIONS AT OTHER LOCATIONS IN THE WORK UNLESS SET FORTH OTHERWISE

700 Cherry Street
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HVAC RENOVATIONS
 AT
MACOMB JR. - SR. H.S.
 COMMUNITY UNIT SCHOOL DISTRICT NO. 185
 401 EAST 5TH STREET MACOMB, IL 61755



NO.	DATE	REVISIONS	REMARKS

PROJECT NO. 17930210-PHASE 2
 ISSUE DATE: DECEMBER 28, 2010
 SHEET M2.2
 OF (4) 'A' SHEETS

ACTIVE BEAM SCHEDULE

Table with columns: BEAM, ROOM NAME, MFG, MODEL, LENGTH, QUANTITY, APD (IN H2O), SOUND db A, CFM/FT, TOTAL CFM, EAT(*), GPM/ BEAM, WPD, EAT(*), CAP SENS. (BUTH), EAT(*), CAP SENS. (BUTH). Rows include rooms like COPY ROOM, CLASSROOM, OFFICE, STORAGE, BIOLOGY, MATH OFFICE, etc.

PUMP MODULE SCHEDULE

Table with columns: ROOM NO., ROOM NAME, MFG, PUMP MODEL, GPM/ BEAM, TOTAL GPM, WPD, PIPE SIZE, Volts, Watts, Speed. Rows include rooms like COPY ROOM, CLASSROOM, OFFICE, STORAGE, BIOLOGY, etc.

POOL UNIT SCHEDULE

Table with columns: MARK, MANUFACTURER, MODEL NUMBER, FAN CFM, AIR TEMP/RH, ESP H2O(IN), H2O REMOVAL LB/HR, COOLING BTU/HR, SENSIBLE BTU/HR, COND COIL GPM, COND COIL H2O PD FT, PUMP P-I-O, HEATING BTU/HR, HEAT COIL EAT/LAT, HEAT COIL ENT/LNT, HEAT COIL GPM, HEAT COIL H2O PD FT, PUMP P-S, POOL HT 6PM, POOL HT PD H2O FT, PUMP P-Q, FILTER QTY, SIZE, VOLTS, ELECTRICAL phi, MCA, MOP, NOTES, O.A CFM. Includes details for D-1 and D-2 units.

1 R-407c REFRIGERANT
2 NOTE PUMPS ARE TO BE ACTIVATED BY DECTRON UNIT.

Original installation drawings for reference only

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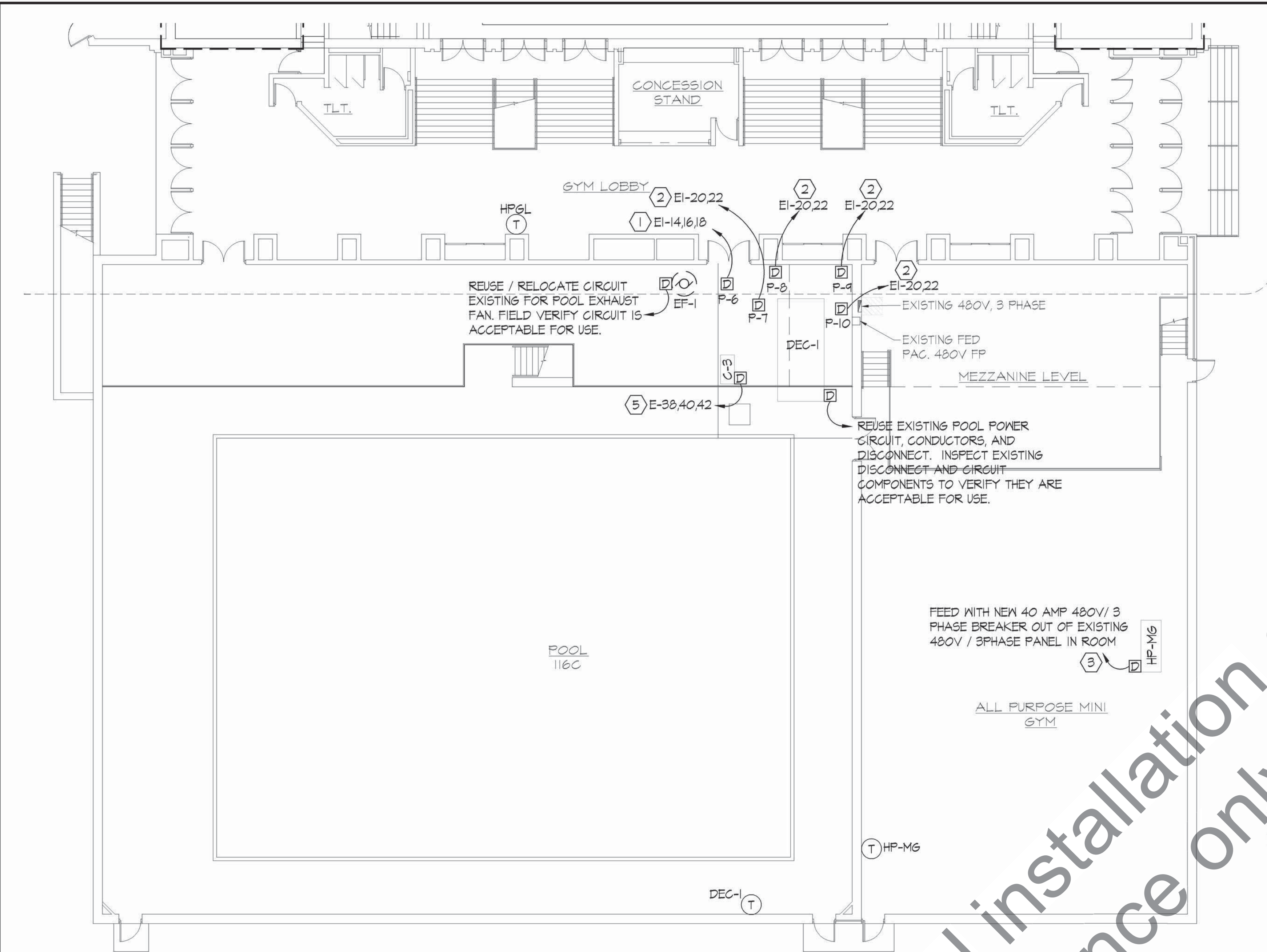
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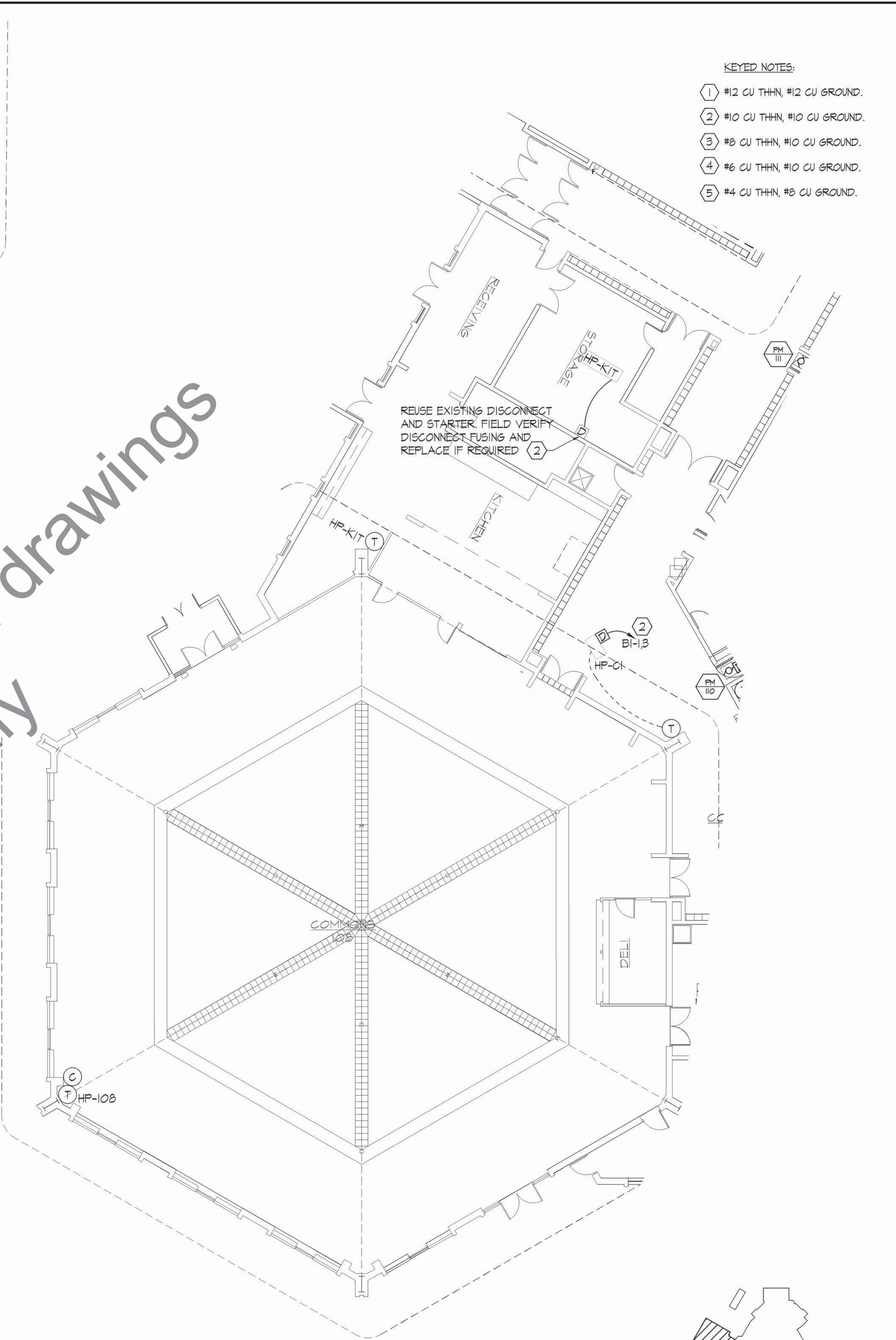
Professional Engineer Seal: KENNETH B. MERRITT, REG. NO. 062-05347, STATE OF ILLINOIS, EXPIRES 1/30/2011

REVISIONS table with columns: NO., DATE, REMARKS.

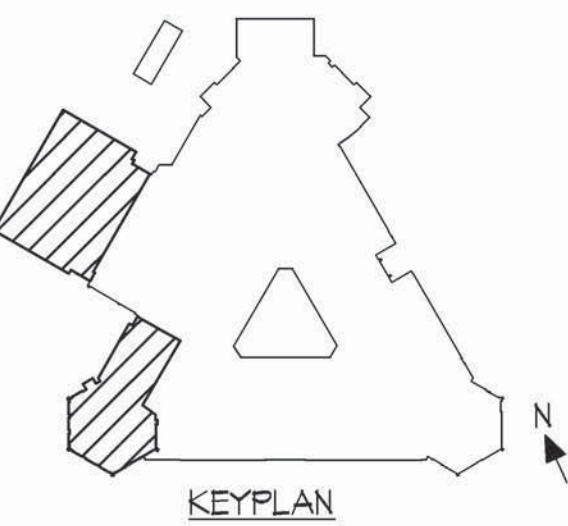
PROJECT NO. 17930210-PHASE 2
ISSUE DATE: DECEMBER 28, 2010
SHEET M4.1
OF (4) 'A' SHEETS



02 POWER POOL FLOOR PLAN
SCALE: 1" = 10'-0"



01 POWER COMMONS FLOOR PLAN
SCALE: 1" = 10'-0"



- KEYED NOTES:**
- ① #12 CU THHN, #12 CU GROUND.
 - ② #10 CU THHN, #10 CU GROUND.
 - ③ #8 CU THHN, #10 CU GROUND.
 - ④ #6 CU THHN, #10 CU GROUND.
 - ⑤ #4 CU THHN, #8 CU GROUND.

Original installation drawings
for reference only

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NO.	DATE	REVISIONS	REMARKS

PROJECT NO. 17930210-PHASE 2
ISSUE DATE DECEMBER 28, 2010
SHEET E1.1
OF (4) 'A' SHEETS

JOB # 100228 F.L.T.D. 1/27/11