

**TEMPERATURE CONTROL SYSTEM SPECIFICATIONS**

**PART 1 GENERAL**

**1.01. CONTRACT DRAWINGS:** IN GENERAL, DRAWINGS ARE SCHEMATIC IN NATURE AND ARE INTENDED AS A GUIDE TO THE CONTRACTOR, BUT DO NOT NECESSARILY SHOW ALL DETAILS, OFFSETS, ETC. ALL DRAWINGS SHALL BE THOROUGHLY INSPECTED BY THE CONTRACTOR. THE CONTRACTOR'S WORK SHALL CONFORM TO THE INFORMATION CONTAINED IN THIS SPECIFICATION AND/OR AS INDICATED IN THE LATEST REVISION OF THE DRAWINGS REFERRED TO THEREIN. THE CONTRACTOR SHALL CONSULT WITH THE ENGINEER REGARDING ALL QUESTIONS, UPON WHICH HE MAY BE IN DOUBT, BEFORE PROCEEDING WITH FABRICATION OF PARTS AFFECTED. AT HIS OWN EXPENSE, THE CONTRACTOR SHALL PREPARE ALL ADDITIONAL DETAIL OR FIELD INSTALLATION DRAWINGS NECESSARY. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND CONDITIONS INDICATED ON THE ENGINEER'S LAYOUT DRAWINGS AND DETERMINE IF ANY CHANGES ARE REQUIRED IN CONDUITS, PIPING RUNS, DRAINS, ETC. TO AVOID INTERFERENCE. MAJOR CHANGES SHALL NOT BE MADE WITHOUT THE APPROVAL OF THE ENGINEER. WHILE THE DRAWINGS SHALL BE ADHERED TO AS CLOSELY AS POSSIBLE, THE CONTRACTOR HAS THE RIGHT TO VARY THE RUN OF CONDUITS, PIPING AND/OR DUCTS DURING PROGRESS OF THE WORK AS MAY BE FOUND NECESSARY OR DESIRABLE TO AVOID INTERFERENCES. MAJOR REVISIONS SHALL BE VERIFIED WITH THE ENGINEER.

**1.02. VERIFICATION:**  
**A. BEFORE RUNNING ANY CONDUITS, WIRE, OR INSTALLED EQUIPMENT, ETC., WITHIN THE SITE,** THIS CONTRACTOR SHALL ASSURE HIMSELF THAT THESE MATERIALS CAN BE INSTALLED AS CONTEMPLATED, WITHOUT TRAPPING OR INTERFERING WITH COLUMNS, BEAMS, PIPING, FIXTURES, ETC. ANY NECESSARY MAJOR DEVIATION SHALL BE REFERRED TO THE ENGINEER FOR ADJUSTMENT BEFORE MATERIALS ARE INSTALLED. OF NECESSITY, OPENINGS, SUPPORTING STEEL, FIELD BUILT CURBS, ELECTRICAL DATA, SPACE REQUIREMENTS, ETC., WERE DESIGNED AROUND SPECIFIC PARAMETERS. WHEN THE CONTRACTOR DETERMINES THE MAKE OF EQUIPMENT TO BE PROVIDED FOR THE JOB, IT SHALL BE HIS RESPONSIBILITY TO VERIFY AND COORDINATE UNIT DIMENSIONS WITH THE GENERAL CONTRACTOR AND ALL OTHER INTERESTED CONTRACTORS ON THE JOB. IT SHALL ALSO BECOME THE CONTRACTOR'S RESPONSIBILITY TO CHANGE AS NECESSARY, THROUGH THE ENGINEER, ALL REQUIRED DIMENSIONS SO THAT OPENINGS, SUPPORTING STEEL, CURBS, ELECTRICAL DATA, ETC. WILL FIT THE EQUIPMENT SUPPLIED. ANY ADDITIONAL COST WILL BE THE SOLE RESPONSIBILITY OF THIS CONTRACTOR. IN ADDITION, ELECTRICAL POWER, INTERLOCK AND CONTROL DIAGRAMS AND PIPING ARRANGEMENTS WERE DESIGNED AROUND ONE SPECIFIC MANUFACTURER. IF ADDITIONAL WIRING, PIPING CONTROLS, ETC., ARE REQUIRED FOR OTHER EQUIPMENT, THIS CONTRACTOR SHALL INCLUDE THE COST OF THE SAME IN HIS PRICE.

**B. DIMENSIONS, ELEVATIONS OF RELATIVE LOCATIONS OF EXISTING EQUIPMENT, SEWERS, PIPES, DUCTS, CONDUITS, ETC., IN PLACE AS SHOWN ON THE DRAWINGS, ARE TAKEN FROM AS-BUILT AND RECORD DRAWINGS AND ARE DEEMED RELIABLE ONLY IN SO FAR AS GENERAL LAYOUT IS CONCERNED. SUCH DIMENSIONS SHALL BE USED FOR NEITHER LAYOUT DRAWINGS NOR DETAILING COMPONENTS. THE RESPONSIBILITY FOR CHECKING IN PLACE ITEMS SHALL BE THE CONTRACTOR'S.**

**C. ALL MEASUREMENTS, THE EXACT DETERMINATION OF RELATIVE ELEVATIONS OR LOCATIONS, THE ASCERTAINING OF ACCURACY OF ALL GIVEN ELEVATIONS AND DIMENSIONS AND THE ASCERTAINING OF ALL NECESSARY ADDITIONAL INFORMATION TO INSURE THE PROPER FIT AND COORDINATION OF ALL CONDUIT EQUIPMENT, DUCTS, AND PIPING SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.**

**1.03. SITE VISIT:** ALL CONTRACTORS, BIDDING THE WORK INDICATED THROUGHOUT THE CONTRACT DOCUMENTS, ARE REQUIRED TO VISIT, AND THOROUGHLY EXAMINE, THE PROJECT SITE AND ITS ASSOCIATED CONDITIONS. THE CONTRACTOR SHALL FAMILIARIZE HIMSELF WITH ALL EXISTING CONDITIONS UNDER WHICH THIS WORK MUST BE PERFORMED. ALL CONTRACTORS SHALL REPORT ANY DISCREPANCIES TO THE ARCHITECT PRIOR TO SUBMITTING A BID PROPOSAL. FAILURE TO DO SO SHALL BE DEEMED AS ACCEPTANCE OF EXISTING CONDITIONS. NO ADDITIONAL COMPENSATION WILL BE CONSIDERED FOR ANY DEVIATIONS OR DISCREPANCIES TO THESE PLANS AFTER A CONTRACTOR HAS BEEN SELECTED.

**1.04. GUARANTEE:** THE CONTRACTOR GUARANTEES, BY HIS ACCEPTANCE OF THE CONTRACT, THAT ALL WORK WILL BE FREE FROM DEFECTS IN WORKMANSHIP AND/OR MATERIALS, FOR A PERIOD OF ONE YEAR FOLLOWING PROJECT COMPLETION UNLESS NOTED OTHERWISE, AND THAT ALL APPARATUS WILL DEVELOP CAPACITIES AND CHARACTERISTICS SPECIFIED. SHOULD ANY DEFECTS IN WORKMANSHIP AND/OR MATERIALS REQUIRE REDESIGN OF ANY PART OF THE ELECTRICAL, MECHANICAL, PLUMBING OR ARCHITECTURAL LAYOUT, ALL SUCH REDESIGN AND ALL NEW DRAWINGS AND DETAILING REQUIRED THEREOF SHALL, WITH THE APPROVAL OF THE ARCHITECT, BE PREPARED BY THE CONTRACTOR AT HIS OWN EXPENSE. WHERE SUCH APPROVED DEVIATION REQUIRES A DIFFERENT QUANTITY AND ARRANGEMENT OF DUCTWORK, PIPING, WIRING, CONDUIT AND/OR EQUIPMENT FROM THAT SPECIFIED OR DETAILED ON THE DRAWINGS, WITH THE APPROVAL OF THE ARCHITECT, THE CONTRACTOR SHALL FURNISH AND INSTALL ALL SUCH MATERIALS AND/OR EQUIPMENT REQUIRED BY THE SYSTEM AT NO ADDITIONAL COST TO THE OWNER.

**1.05. SUBMITTALS:** AFTER RECEIVING APPROVAL OF EQUIPMENT MANUFACTURERS, AND PRIOR TO DELIVERY OF ANY MATERIAL TO THE JOB SITE AND SUFFICIENTLY IN ADVANCE OF THE REQUIREMENTS TO ALLOW ARCHITECT AMPLE TIME FOR CHECKING, SUBMIT FOR REVIEW DETAILED DIMENSIONED DRAWINGS AND/OR EQUIPMENT CUT SHEETS SHOWING CONSTRUCTION SIZE, ARRANGEMENT, OPERATING CLEARANCES, ALL SCHEDULED PERFORMANCE CHARACTERISTICS AND CAPACITIES OF MATERIAL AND EQUIPMENT. SHOP DRAWINGS SHALL SHOW THE RATINGS OF ITEMS AND SYSTEMS AND HOW THE COMPONENTS OF ITEMS AND SYSTEMS ARE ASSEMBLED, FUNCTION TOGETHER AND HOW THEY WILL BE INSTALLED ON THE PROJECT. DATA AND SHOP DRAWINGS FOR COMPONENT PARTS OF AN ITEM OR SYSTEM SHALL BE COORDINATED AND SUBMITTED AS A UNIT. SHOP DRAWINGS SHALL CLEARLY HIGHLIGHT, ENCIRCLE, OR OTHERWISE CLEARLY IDENTIFY ALL DEVIATIONS FROM THE CONTRACT DOCUMENTS. PRIOR TO SUBMITTING, CONTRACTOR SHALL THOROUGHLY REVIEW EACH SUBMITTAL AND CHECK FOR COMPLIANCE WITH THE CONTRACT DOCUMENTS, AND MARK EACH SUBMITTAL WITH APPROVAL STAMP TO SHOW THAT SUBMITTALS HAVE BEEN REVIEWED AND APPROVED BY THE CONTRACTOR. FAILURE OF CONTRACTOR TO COMPLY FULLY WITH THIS SECTION WILL RESULT IN REJECTION OF SUBMITTAL.

**A. APPROVAL STAMP:** STAMP EACH SUBMITTAL WITH A UNIFORM, APPROVAL STAMP. STAMP SHALL INCLUDE PROJECT NAME, LOCATION, SPECIFICATION SECTION, NAME OF REVIEWER, DATE OF CONTRACTOR'S APPROVAL, AND STATEMENT CERTIFYING THAT SUBMITTAL HAS BEEN REVIEWED, CHECKED, AND APPROVED FOR COMPLIANCE WITH THE CONTRACT DOCUMENTS.

**1.06. PERMITS AND CODES:** CONTRACTOR SHALL BE RESPONSIBLE FOR ALL COSTS ASSOCIATED WITH PERMITS, TAXES AND INSURANCE. ALL WORK SHALL BE INSTALLED IN COMPLETE CONFORMITY WITH LOCAL CODES AND ORDINANCES AS WELL AS THE FOLLOWING:

- A. NFPA 90
- B. MBC
- C. MMC
- D. LOCAL CODES & ORDINANCES
- E. ASHRAE
- F. ANSI
- G. ASTM
- H. UL
- I. NEC
- J. AMCA
- K. SMACNA

**1.07. CONNECTIONS TO EXISTING WORK:** PLAN THE INSTALLATION OF NEW WORK AND CONNECTIONS TO EXISTING WORK TO INSURE MINIMUM INTERFERENCE WITH THE REGULAR OPERATION OF THE EXISTING FACILITIES. SUBMIT TO THE ARCHITECT, FOR HIS APPROVAL, A PROGRESS SCHEDULE INDICATING ALL NECESSARY TEMPORARY SHUTDOWNS OF EXISTING SERVICES. ALL SHUTDOWNS SHALL BE MADE AT SUCH TIMES AS WILL NOT INTERFERE WITH REGULAR OPERATION OF THE EXISTING FACILITIES AND ONLY AFTER WRITTEN APPROVAL FROM THE ARCHITECT.

**1.08. SCOPE:** TEMPERATURE CONTROLS CONTRACTOR SHALL ADD NEW FREEZER EVAPORATOR SYSTEM TO BUILDING AUTOMATION SYSTEM TO MONITOR SYSTEM OPERATIONS. CONTRACTOR SHALL PROVIDE ALL NECESSARY ITEMS TO ALLOW ASSOCIATED CONTROL POINTS LISTED ON THESE DOCUMENTS TO BE ADDED TO THE EXISTING BUILDING AUTOMATION SYSTEM.

**PART 2 TEMPERATURE CONTROLS**

**2.01. TEMPERATURE CONTROL CONTRACTOR:** ALL TEMPERATURE CONTROL WORK SHALL BE ACCOMPLISHED BY AUTOMATED LOGIC CONTRACTING SERVICES - GREAT LAKES. CONTACT ANDREW MOBIUS AT 419-887-1611.

**2.02. TEMPERATURE CONTROL WIRING:** MECHANICAL CONTRACTOR SHALL BE RESPONSIBLE FOR ALL TEMPERATURE CONTROL AND INTERLOCK WIRING REQUIRED FOR THE PROJECT. ALL EXPOSED TO VIEW 24V AND ALL 120V TEMPERATURE CONTROL WIRING SHALL BE ROUTED IN ITS OWN SEPARATE CONDUIT FOR ENTIRE ROUTING; REFER TO THE ELECTRICAL SPECIFICATIONS FOR CONDUIT MATERIAL AND INSTALLATION REQUIREMENTS.

**PART 3 CLOSE OUT**

**3.01. CLOSE-OUT:** CONTRACTOR SHALL PROVIDE FIELD TESTING, CHECK-OUT AND SYSTEM DEMONSTRATIONS TO OWNER TO ASSURE PROPER PERFORMANCE AND ADJUSTMENT OF ITEMS PROVIDED UNDER THE CONTRACT. REMOVE ALL DEBRIS CREATED BY THE CONSTRUCTION WORK AND CLEAN ALL EQUIPMENT, AIR DEVICES ETC., INSIDE AND OUTSIDE. PROVIDE A HARDBOUND BINDER WHICH INCLUDES: COPIES OF EACH APPROVED SHOP DRAWING, PREVENTATIVE MAINTENANCE PROCEDURES FOR EACH ITEM, OPERATION AND INSTRUCTION MANUALS, LITERATURE SUPPLIED WITH HVAC EQUIPMENT, AND A LIST OF ALL CONTRACTOR'S PURCHASE ORDERS WITH SUPPLIERS NAMES, ADDRESSES AND PHONE NUMBERS, FOR ALL MATERIALS. INCLUDE NAME AND ADDRESS OF A QUALIFIED SERVICE AGENCY FOR EACH SYSTEM. PROVIDE INSTRUCTION TO PERSONNEL SELECTED BY THE OWNER, TO FAMILIARIZE THEM WITH THE LOCATION OF SIGNIFICANT EQUIPMENT, TRAIN THEM ON EQUIPMENT FUNCTIONS, REVIEW MAINTENANCE PROCEDURES AND COORDINATE INFORMATION AVAILABLE IN THE CLOSE-OUT BINDER. CLOSE OUT BINDER SHALL BE FURNISHED TO OWNER WITHIN 60 DAYS OF PROJECT COMPLETION.

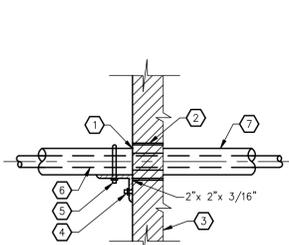
**3.02. AS-BUILT DRAWINGS:** CONTRACTOR SHALL ACCURATELY AND NEATLY RECORD ANY DEVIATIONS FROM THE PLANS AND SPECIFICATIONS. AS-BUILTS SHALL BE REGULARLY UPDATED DURING THE COURSE OF CONSTRUCTION, AND DELIVERED TO THE OWNER WITHIN 30 DAYS OF PROJECT ACCEPTANCE.

**TEMPERATURE CONTROL SYSTEM POINT LIST**

SYSTEM POINT DESCRIPTION	HARDWARE POINTS				SOFTWARE POINTS				SHOW ON GRAPHIC	REMARKS	
	AI	AO	BI	BO	AV	BV	SCHED	TREND			ALARM
	FREEZER										
EVAPORATOR STATUS			X				X			X	
EVAPORATOR ALARM									X	X	
CONDENSOR STATUS			X				X			X	
CONDENSOR ALARM									X	X	
SPACE TEMPERATURE		X				X	X			X	
SPACE ALARM									X	X	
REMARKS											

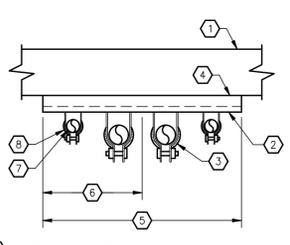
**TEMPERATURE CONTROL SYSTEM POINT LIST**

SYSTEM POINT DESCRIPTION	HARDWARE POINTS				SOFTWARE POINTS				SHOW ON GRAPHIC	REMARKS	
	AI	AO	BI	BO	AV	BV	SCHED	TREND			ALARM
	COOLER										
EVAPORATOR STATUS			X				X			X	
EVAPORATOR ALARM									X	X	
CONDENSOR STATUS			X				X			X	
CONDENSOR ALARM									X	X	
SPACE TEMPERATURE		X				X	X			X	
SPACE ALARM									X	X	
REMARKS											



- 1 SEAL ENTIRE PERIMETER OF OPENING.
- 2 16 GAUGE GALV. SLEEVE.
- 3 WALL CONSTRUCTION.
- 4 ANCHOR TO STRUCTURE W/ 1/2" x 1-1/2" BOLT.
- 5 U-BOLT W/ WASHER.
- 6 REFRIGERANT LINE.
- 7 INSULATION AS SPECIFIED.

**A REFRIGERANT PIPE ANCHOR AT WALL**  
M3.01 NO SCALE



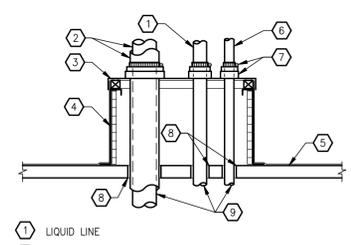
- 1 STRUCTURAL MEMBER
- 2 "UNISTRUT" CHANNEL OR ENGINEER APPROVED EQUAL (TYPICAL)
- 3 SECURE REFRIGERANT PIPING TO CHANNEL WITH "HYDRA-ZORB" "CUSH-A-CLAMP" OR EQUAL (TYPICAL)
- 4 THE MECHANICAL CONTRACTOR SHALL LOCATE THE HAT CHANNELS AND TRUSSES TO ANCHOR REFRIGERANT LINES
- 5 MULTIPLE PIPING (6" CHANNEL PER PIPE)
- 6 TWO PIPES (12" MINIMUM CHANNEL)
- 7 TYPICAL REFRIGERANT PIPING
- 8 BUTT INSULATION OF LIQUID LINE AGAINST CLAMP ASSEMBLY

**B REFRIGERANT PIPE SUPPORT**  
M3.01 NO SCALE

**PIPE MATERIAL CONSTRUCTION & INSULATION SCHEDULE**

(REFER TO SPECIFICATIONS SECTION "230719" & "232300" FOR ADDITIONAL REQUIREMENTS.)

SERVICE DESCRIPTIONS	ABBREVIATION	PIPING MATERIAL	MEANS OF CONNECT	FITTINGS RATING	INSULATION
CONDENSATE DRAIN LINES	CDL	2" & SMALLER: TYPE L HARD COPPER	THREAD & COUPLE	WROUGHT	3/4" FIBERGLASS
REFRIGERATION PIPING: LIQUID SUCTION	L S	COPPER, PRE-CHARGED LINE SETS. TYPE ACR HARD COPPER, CLEANED & CAPPED. SIZE AND INSTALL REFRIGERANT PIPING PER REFRIGERATION MANUFACTURERS WRITTEN INSTRUCTIONS	SILVER PHOSPHATE BRAZING	WROUGHT REFRIG.	ELASTOMERIC OR FIBERGLASS WITH THE FOLLOWING THICKNESS: < 1-1/2" = 1/2" > 1-1/2" = 1" WRAP ALL INSULATION INSTALLED OUTSIDE WITH ALUMINUM JACKET SEALED WATER TIGHT.



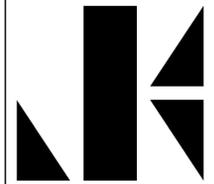
- 1 LIQUID LINE
- 2 SUCTION LINE WITH ARMAFLEX INSULATION AS SPECIFIED
- 3 MANUFACTURED NEOPRENE CURB CAP
- 4 MINIMUM 9-1/2" HIGH INSULATED PIPING CURB
- 5 ROOF DECK. REFER TO ARCHITECTURAL PLANS FOR ROOF CONSTRUCTION AND PITCH.
- 6 ELECTRICAL CONDUIT
- 7 NEOPRENE BOOT W/ METAL BAND TYPE CLAMP (TYPICAL)
- 8 CUT OPENINGS IN ROOF DECK 1" LARGER THAN PIPE O.D.
- 9 ANCHOR PIPING AND CONDUIT AS CLOSE TO ROOF DECK AS POSSIBLE

**C ROOF PIPING CURB DETAIL**  
M3.01 NO SCALE

**HVAC DRAWING LIST**

DWG NO.	TITLE	FILE NO.
M1.01	HVAC LEGEND, SCHEDULES, & DETAILS	24003612M1.01.dwg
M3.01	HVAC DEMOLITION & NEW WORK PARTIAL PLANS	24003612M3.01.dwg

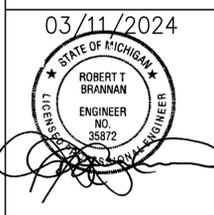
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 1110 WEST FRONT STREET  
 MONROE, MICHIGAN 46161  
 WWW.KOHLERARCHITECT.NET



Mechanical, Electrical, Plumbing, Fire Protection  
 415 Conant St. - Maumee, OH 43551 - 419.891.0022



DATE	DESCRIPTION
03.18.2024	BIDDING & STATE REVIEW

**COOLER / FREEZER REPLACEMENT & RELATED WORK**

**ARBORWOOD SOUTH ELEMENTARY**  
 1008 RIVERVIEW AVENUE, MONROE, MI 48162  
**MONROE PUBLIC SCHOOLS**  
 1275 N. MACOMB STREET, MONROE, MI 48162

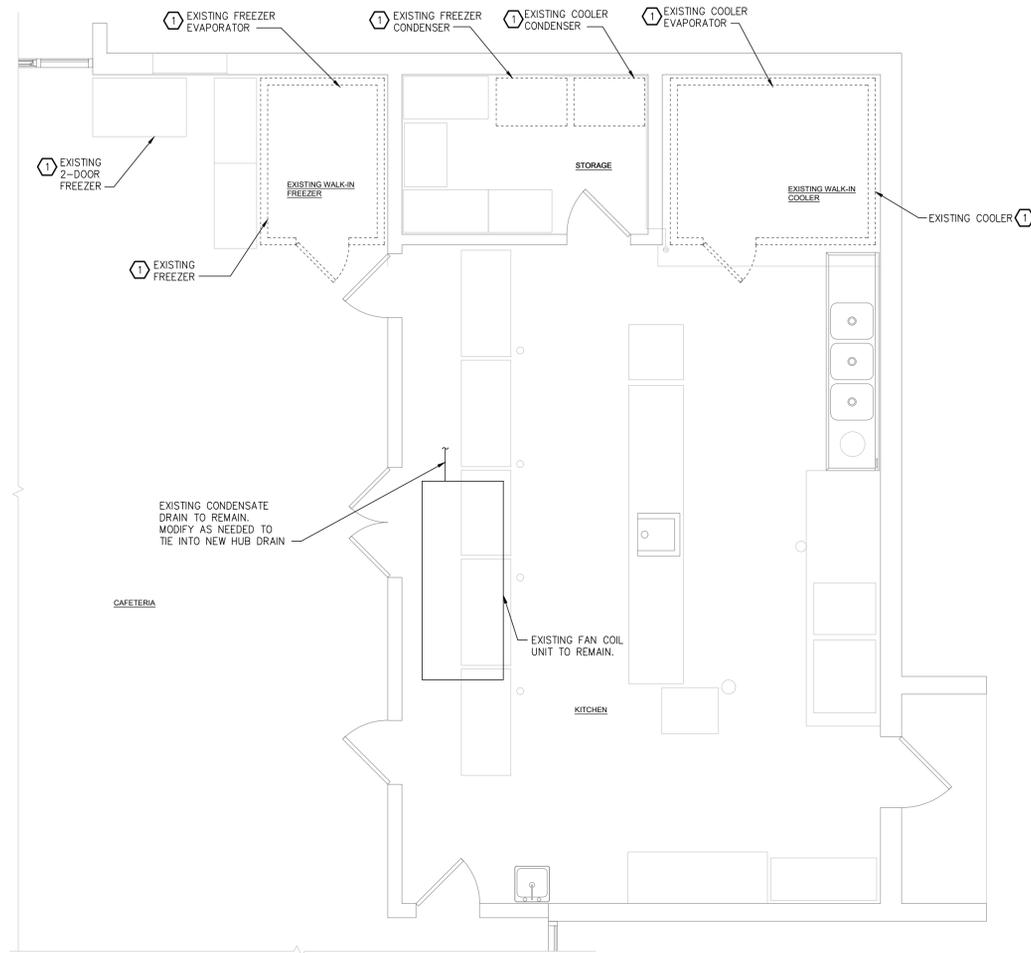
**JOB # 24103**

**HVAC LEGEND, SCHEDULES & DETAILS**

**M1.01**

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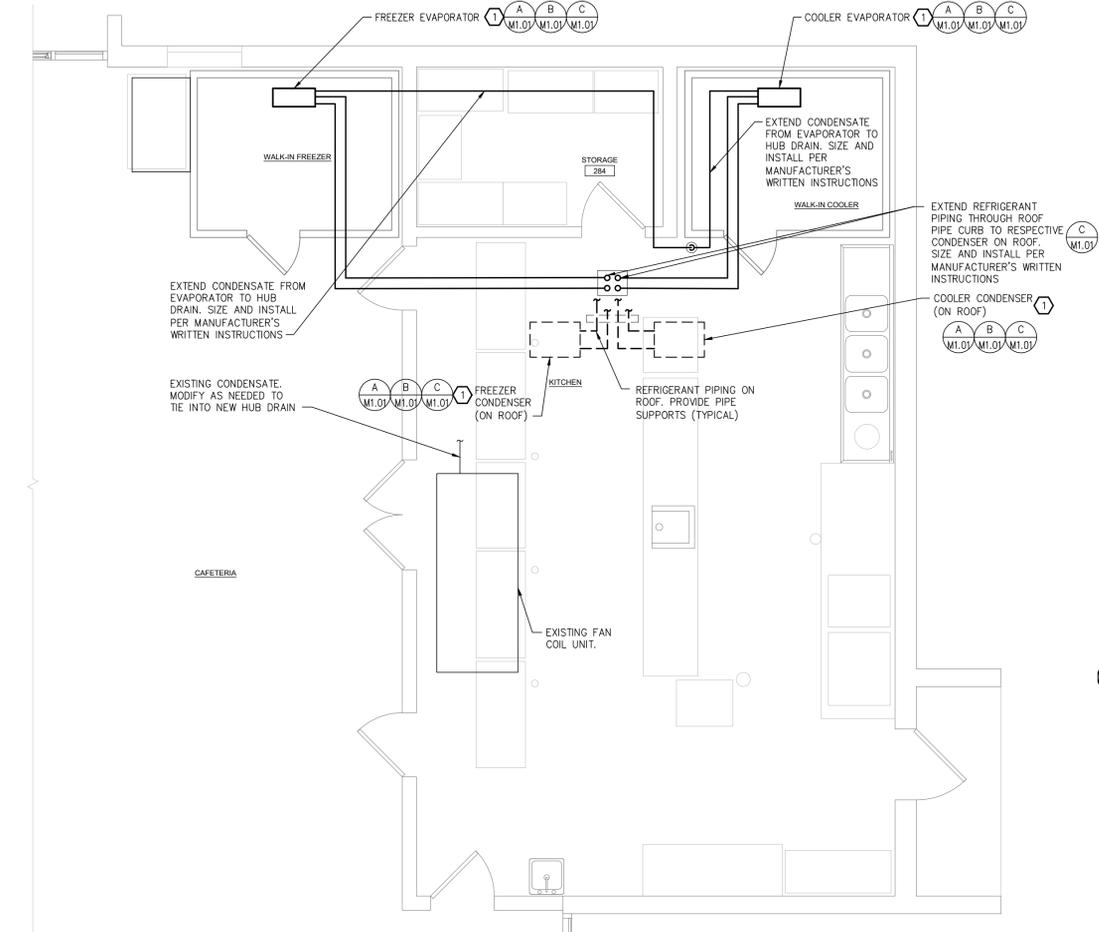
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**HVAC PARTIAL DEMOLITION PLAN**  
SCALE: 1/4" = 1'-0"

**PLAN NOTES**

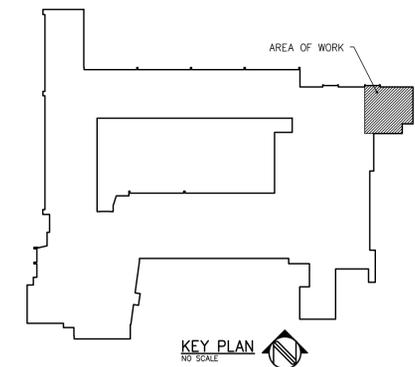
- 1 DISCONNECT AND REMOVE EXISTING REFRIGERANT PIPING AND CONDENSATE PIPING ASSOCIATED WITH COOLER/FREEZER.



**HVAC PARTIAL PLAN**  
SCALE: 1/4" = 1'-0"

**PLAN NOTES**

- 1 EVAPORATOR AND CONDENSER FURNISHED AND INSTALLED BY REFRIGERATION CONTRACTOR. FULL APPROVED SUBMITTAL INCLUDING SIZING, PIPE ROUTING, INSTALLATION INSTRUCTIONS, ETC. SHALL BE PROVIDED TO AHJ FOR FINAL APPROVAL.



**KEY PLAN**  
NO SCALE

**GENERAL NOTES:**

- 1 T.C.C. WILL COORDINATE COOLER AND FREEZER ALARM WITH SECURITY SYSTEM. CONTACT OWNER FOR ADDITIONAL INFORMATION.
- 2 VERIFY ELECTRICAL REQUIREMENTS, CONNECTION, AND EXACT LOCATION OF CONNECTIONS. COORDINATE WITH EQUIPMENT SUPPLIER/CONTRACTOR.

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03/11/2024



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**COOLER / FREEZER REPLACEMENT & RELATED WORK**  
AT **ARBORWOOD SOUTH ELEMENTARY**  
1008 RIVERVIEW AVENUE, MONROE, MI 48162  
FOR **MONROE PUBLIC SCHOOLS**  
1275 N. MACOMB STREET, MONROE, MI 48162

JOB # **24103**

HVAC DEMOLITION & NEW WORK  
PARTIAL PLANS  
**M3.01**