

MECHANICAL SPECIFICATIONS

1. SECTION 15010 - BASIC MECHANICAL REQUIREMENTS

- A. The work of each of the mechanical sections includes furnishing and installing the material, equipment and systems complete as specified and/or indicated on the drawings. The mechanical installations, when finished, shall be complete and coordinated, ready for satisfactory service.
- B. All work under this contract shall be done in strict accordance with all applicable municipal, state, Howard County, NFPA, International and local codes that govern each particular trade.
- C. The contractor shall make applications and pay all charges for all necessary permits, licenses and inspections as required under the above codes. Upon completion of the work, the customary certifications of approval shall be furnished.
- D. No materials or equipment shall be used in the work until approved. Before submission of the shop drawings, and not more than thirty (30) days after award of the contract, the contractor shall submit for approval a complete list of materials and equipment which he intends to furnish, giving manufacturer and catalog numbers. A complete list of proposed sub-contractors shall also be submitted.
- E. The contractor shall examine all drawings and specifications and shall inspect the existing conditions of the site. Failure to comply with this requirement will not relieve the contractor of responsibility for complying with the intent of the contract documents.
- F. The drawings indicate the general arrangement of the mechanical installations. Details of proposed departures due to actual field conditions or other causes shall be submitted for approval prior to installation. Resubmitting of completed items due to improper field coordination shall be at the contractor's expense.
- G. Provide sufficient access and clearance for all items of equipment requiring servicing and maintenance, such as valves, dampers, controls, drives, drains, vents, starters, switches, filters, traps and major items of equipment.
- H. The contractor shall perform all necessary cutting and patching as required to complete the installation of the mechanical work. Patching of walls, floors, ceilings, roof, etc. shall match the adjacent surfaces.
- I. The contractor shall prepare three (3) copies of a record and information booklet. The booklet shall be bound in a three ring loose-leaf binder. Provide the following data in the booklet:
- 1) Catalog data on each piece of equipment furnished
 - 2) Approved shop drawings on each piece of equipment furnished
 - 3) Maintenance, operation and lubrication instruction on each piece of equipment furnished
 - 4) Simplified temperature control diagram
 - 5) Manufacturer's and contractor's guarantees
 - 6) Commissioning reports
 - 7) Schedule/description of all service work/maintenance inspections required by the paragraphs of this section
- J. The entire new plumbing system shall be tested hydrostatically before insulation covering is applied and proved tight under the following gauge pressures:
- Sanitary piping as specified below
 Natural gas piping mercury gauge
- K. All soil, waste and vent piping shall be tested by the contractor. The entire new drainage system and venting system shall have all necessary openings plugged and filled with water to the level of ten (10) feet above the main or branch being tested. The system shall hold this water for thirty (30) minutes without showing a drop greater than four (4) inches.
- Note: If any code or authority requires testing which is different than the test listed above, the more stringent test shall be performed.
- L. All parts of the heating, ventilating, air conditioning and exhaust systems shall be adjusted, checked, balanced and tested by an independent A.A.B.C. certified testing and balancing contractor approved by the owner. The contractor shall put all systems and equipment into full operation, and shall test and balance all devices to within ten (10) percent of capacities indicated on the drawings. Submit copies of the balancing reports as required by the contract. Permanently mark the position of each balancing damper.
- M. Upon completion of the mechanical installations, the contractor shall provide a complete set of prints of the mechanical contract drawings which shall be legibly marked in red pencil to show all changes and departures of the installation as compared with the original design. They shall be suitable for use in preparation of record drawings.
- N. All piping and valve systems shall be identified with labels and tags. Materials shall be as manufactured by Seton name plate corporation.
- O. All new mechanical installations, including all materials and labor shall be guaranteed for a period of one (1) year from date of owner acceptance. The above shall not in any way void or abrogate equipment manufacturer's guarantee or warranty. Certificates of guarantee shall be delivered to the owner.
- P. Contractor shall also provide one (1) year free service to keep the equipment in operating condition. This service shall be provided per the following schedule and rendered upon request when notified of any equipment malfunction.
- Q. In addition to the first year warranty period, the contractor shall provide, at no additional cost to the owner, a minimum of four (4) service calls and maintenance inspections. A complete outline of the required maintenance and the proposed schedule shall be included in the "record and information booklet" detailed in Section 15010-Basic Mechanical Requirements, paragraph I, for review and acceptance by the owner/representative and engineer. The inspections are to be performed at three (3) month intervals for a total of four (4) service calls and inspections during the first year warranty period [three (3) times during the year plus the original system start-up commissioning.

The service work and inspections shall include, but not be limited to the following:

- Replace all disposable air filters;
- Clean all permanent air filters;
- Lubricate all motor and fan bearings as required;
- Clean drain pans and drain lines;
- Check and tighten all electrical connections;
- Inspect all belts for adjustment and condition and replace as required;
- Inspect and clean all water strainers;
- Check operating pressures and refrigerant charge;
- Inspect all controls for correct operation and calibrate as required;
- Perform all maintenance as outlined in the equipment manufacturers operation and maintenance manuals.

Upon completion of each scheduled inspection, the contractor shall deliver to the building owner/owner's representative within (48) hours of completion, two (2) copies of the completed inspection report for record purposes.

- R. The mechanical or service contractor shall, at the ninth month, advise the owner of the termination date of the above service. This contractor shall also provide the owner with a detailed proposal, reflecting annual escalation, for the continuation of the service and inspections described above.

2. SECTION 15050 - BASIC MECHANICAL PIPING MATERIAL & METHODS

- A. Provide all labor and materials necessary to furnish and install all piping systems on this project, including interior storm, sanitary, sanitary vent, domestic water, condensate drainage, heating water, chilled water, condenser water, steam, steam condensate, natural gas, refrigerant and medical gas piping systems.

- B. Piping and valves shall be as follows:

1) Sanitary drains below grade or under building and up to five (5) feet from building line:

Piping: Schedule 40 PVC DWV pipe.

Fittings: Solvent weld joints.

2) Sanitary drains and sanitary vents above floor inside building:

Piping: Schedule 40 PVC DWV pipe.

Fittings: Solvent weld joints.

3) Atmospheric condensate and indirect waste:

Piping: 1-1/4" or smaller= type DWV seamless copper tubing or schedule 40 plastic pipe. 2" or larger= schedule 40 plastic pipe.

Fittings: 1-1/4" or smaller= wrought copper solder drainage fittings or solvent sealed plastic fittings. 2" or larger= solvent sealed plastic fittings.

4) Natural gas piping:

Piping: Above grade= schedule 40 black steel. Below grade= schedule 80 black steel mill wrapped.

Fittings: 2" or smaller, threaded. 2-1/2" or larger long radius welding.

Flanges: Class 150 welding neck, Nibco convoluted flange #271 or approved equal.

Gate Valves: 1", 1-1/2" or 2"= union bonnet, rising stem, solid wedge, bronze body, bonnet and stem, threaded ends. Nibco #T-174-A. 2-1/2" or larger= 300 psi, iron body, bolted bonnet, OS&Y, solid wedge, bronze mounted. Nibco #F-667-O.

Ball Valves: 1/2" or 3/4"= forged brass alloy, aluminum tee handle, threaded ends. Nibco GB30 rated at 1/2 psi for indoor appliance connections.

- C. Steel piping shall be similar and equal to National Tube Company, Republic or Bethlehem black or zinc-coated (galvanized) steel as hereinbefore specified. Pipe shall be free from all defects which may affect the durability of the intended use. Each length of pipe shall be stamped with the manufacturer's name.

- D. All hangers for copper piping shall be copper clad, split ring swivel type, having rods with machine threads and threaded copper clad ceiling flange. Cast iron and steel piping supports shall be similar without copper clad and prime paint finish. Maximum distance between pipe hangers shall be as follows:

PVC Piping = 4'
 Steel Piping = 12'

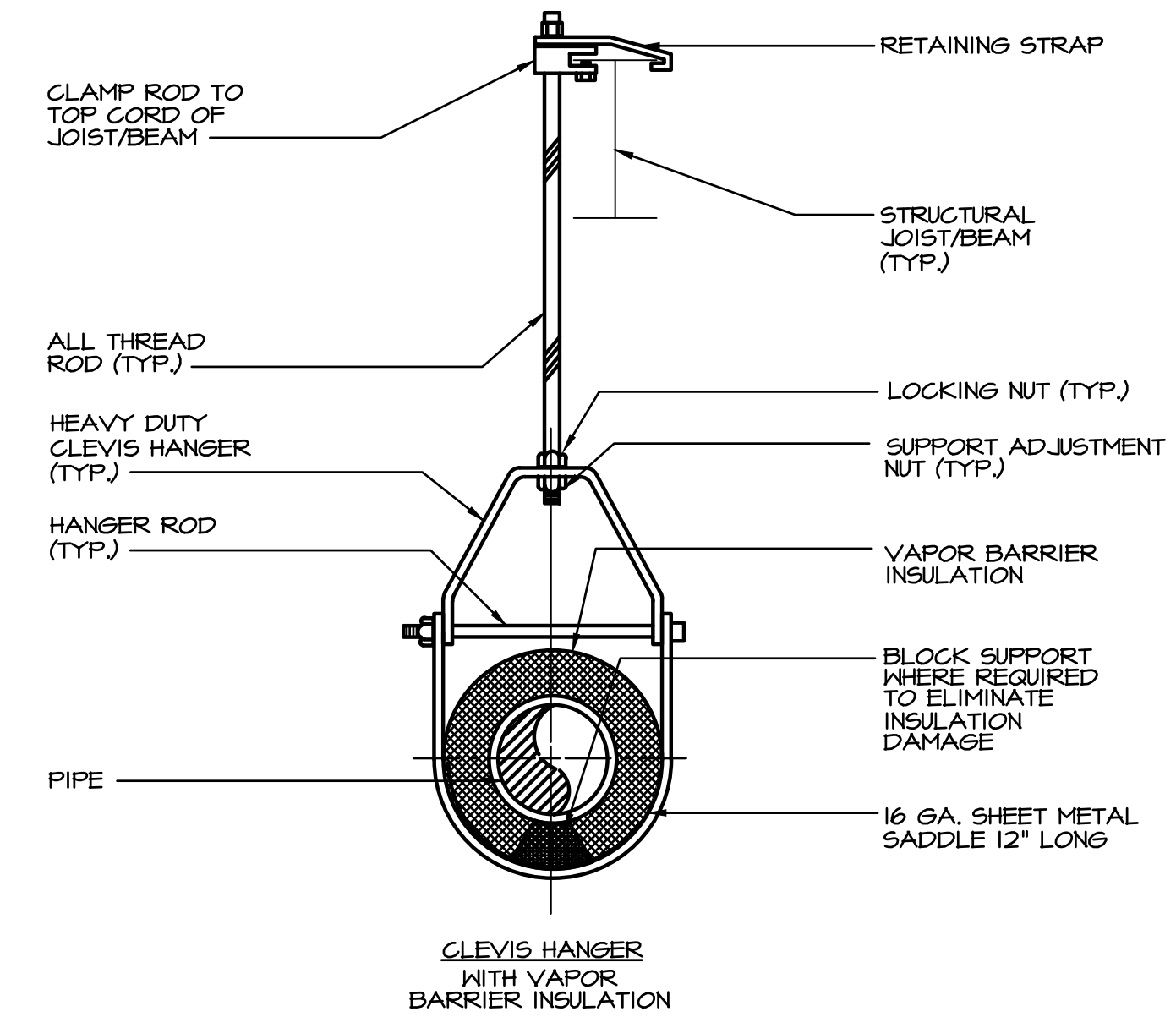
- E. Provide dielectric couplings where non-ferrous metal piping is joined to ferrous metal piping. The gasket material shall be capable of withstanding the temperatures and pressures within the piping system in which installed. Submit dielectric coupling and gasket material for approval.

3. SECTION 15300 - FIRE PROTECTION

- A. All work, materials, equipment and accessories shall comply with the standards of the National Fire Protection Association and all state and local regulations.
- B. Modify the existing wet pipe sprinkler system to properly cover and protect the new architectural design. System shall generally be light hazard, except ordinary hazard in all storage rooms, electrical rooms, etc.
- C. The modifications shall include, but are not limited to valves, flow switches, sprinkler heads and escutcheons, piping, fittings, hangers, signs and other identification markings, as required.
- D. The sprinkler contractor shall carefully examine all documents during the bidding period. He shall familiarize himself with project conditions such as building construction, pipe and ductwork locations and elevations.
- E. Existing sprinkler heads shall be removed and reused as required to meet the new layout. Any new sprinkler heads must match the existing heads. When sprinklers are removed from a fitting or welded outlet, sprinklers shall not be reinstalled unless it is a dry sprinkler system. Dry sprinklers are permitted to be removed and reinstalled in accordance to manufacturer's installation instructions.
- F. The sprinkler contractor shall arrange for approval of the revised sprinkler systems and conduct tests in accordance with NFPA 13.
- G. The sprinkler contractor shall provide a detailed shop drawing showing piping layout, head locations, elevations and coordination with all building structure, electrical and plumbing trades. The contractor shall submit detailed sprinkler shop drawings with actual heads for architect approval prior to any fabrication.
- H. The sprinkler contractor must submit one set of sprinkler shop drawings and hydraulic calculations to the local county fire marshal and/or fire department.
- I. Freezer box to have dry pipe sprinkler system. sprinkler contractor shall verify existing system serving existing walk in freezer and upgrade, replace or provide new as required.

4. SECTION 15400 - PLUMBING

- A. The work covered by this section of the specifications consists of furnishing all labor, equipment and materials in connection with the rough-in, final setting and connections to all plumbing fixtures. The contractor shall carefully review the conditions at the site and all of the contract drawings to determine the extent of the new and renovation plumbing work required.
- B. Sanitary vents thru roof shall be one-piece PVC/rubber boot assembly with pipe clamp flashed and sealed into existing roofing system.
- C. Floor drains and hub drains shall be Watts or approved equal. Drain shall be model FD-100, cast iron with anchor flange, reversible clamping collar, primary/secondary weepholes and adjustable round nickel-bronze strainer. Drain to be primed from nearest flush valve where indicated on drawings.



PIPE SUPPORT DETAIL

NO SCALE

NOTE:

1) ALL HANGERS FOR COPPER PIPING SHALL BE COPPER COATED.

REFRIGERATION EQUIPMENT SCHEDULE																		BASIS OF DESIGN	REMARKS						
UNIT TAG	SERVICE	QUANTITY	DISCHARGE	REFRIGERANT	AIR DATA TOTAL AIR FLOW (CFM)	CAPACITY (BTU*/HR)	DEFROST HEATER			INDOOR FAN DATA			OUTDOOR FAN DATA			OVERALL UNIT SPECIFICATIONS									
							VOLTAGE	PHASE	AMPS	NUMBER TYPE/HP	VOLTAGE	PHASE	AMPS	FAN DIA. (IN)	NUMBER/ TYPE/HP	VOLTAGE	PHASE	AMPS	MOCP	VOLTS	PHASE	WEIGHT			
EVAP-1	REFRIGERATOR	4	HORIZONTAL	R-448A	8,900	-	208	3	34.7	1	208	3	5.4	-	-	-	-	-	-	-	-	-	505#	KRACK MODEL SMD1SE-0556R/V/K	CONNECT TO (1) ROOFTOP CONDENSING UNIT (CU-1). SEE ELECTRICAL PLANS FOR SPECIFIC ELECTRICAL DATA AND STRUCTURAL FOR SUPPORTS AND EXACT LOCATIONS
EVAP-2	REFRIGERATOR	2	HORIZONTAL	R-448A	6,800	-	208	3	23.2	(3)-2 SPEED ED	120	1	5.2	-	-	-	-	-	-	-	-	-	255#	CHANDLER REFRIGERATION MODEL NUMBER HB0370C85BAH3000	CONNECT TO (1) ROOFTOP CONDENSING UNIT (CU-2). SEE ELECTRICAL PLANS FOR SPECIFIC ELECTRICAL DATA AND STRUCTURAL FOR SUPPORTS AND EXACT LOCATIONS
CU-1	REFRIGERATOR	1	VERTICAL	R-448A	-	119,100	-	-	-	-	-	-	-	-	-	-	-	-	-	133.3	208	3	2,100#	KRACK MODEL CSD-0300-LRK	SYSTEM TO BE CONNECTED TO (2) INDOOR EVAPORATORS (EVAP-1) PER MANUFACTURER'S SPECIFICATIONS. SEE ELECTRICAL PLANS FOR SPECIFIC ELECTRICAL DATA AND STRUCTURAL FOR SUPPORTS AND EXACT LOCATIONS
CU-2	REFRIGERATOR	1	VERTICAL	R-448A	-	82,000	208	3	46	-	-	-	-	-	-	-	-	-	-	139.7	208	3	1,900#	KRACK MODEL CSD-0220-LRK	SYSTEM TO BE CONNECTED TO (2) INDOOR EVAPORATORS (EVAP-2) PER MANUFACTURER'S SPECIFICATIONS. SEE ELECTRICAL PLANS FOR SPECIFIC ELECTRICAL DATA AND STRUCTURAL FOR SUPPORTS AND EXACT LOCATIONS

REFRIGERATION EQUIPMENT SCHEDULE

SCALE:NTS

REVISIONS

BY

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SEAL:

PROFESSIONAL CERTIFICATION: I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND.

LICENSE NO. 11735
 EXPIRATION DATE: 12/04/2025

DRAWN BY:
 DMH

DATE:
 11/09/2023

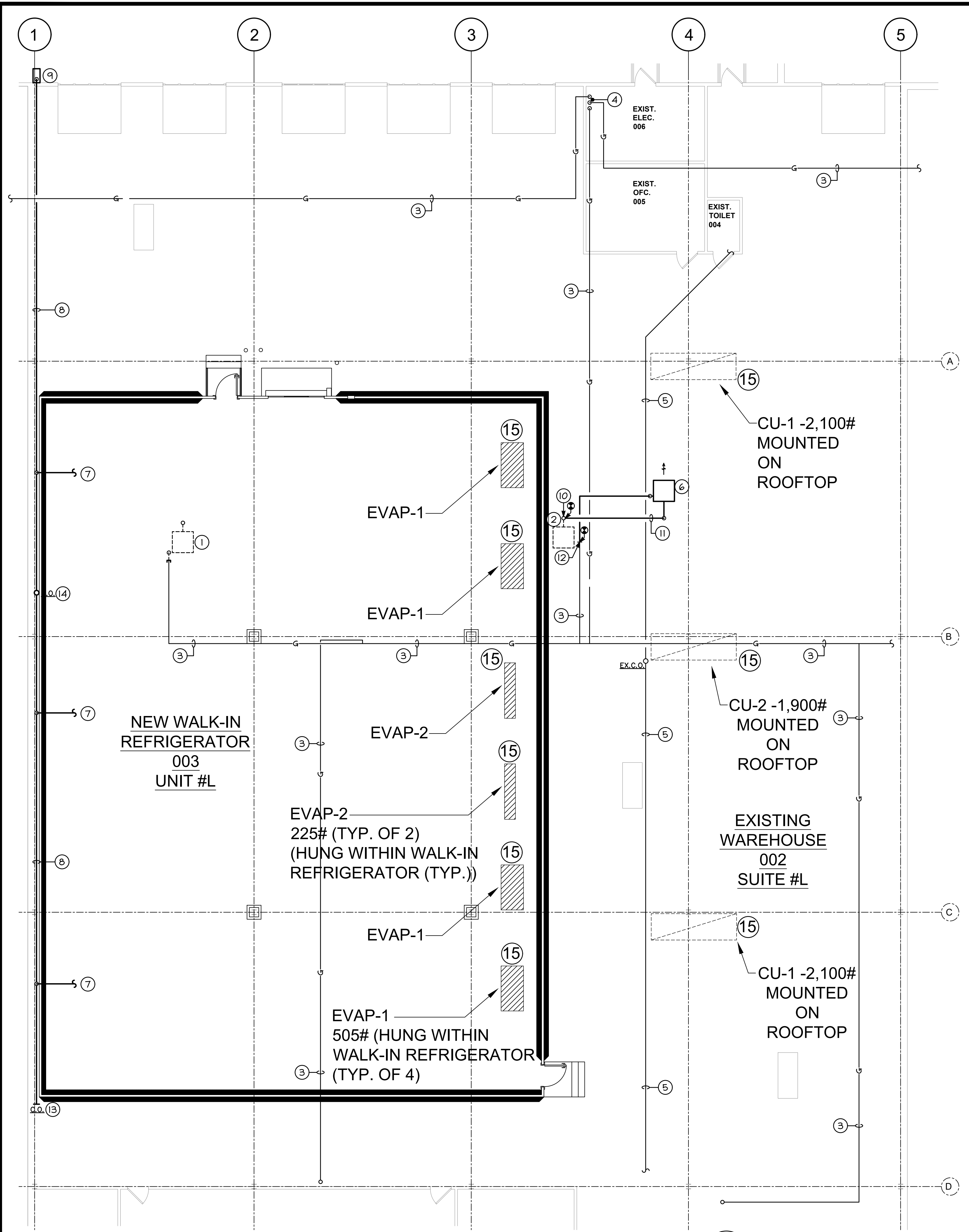
SCALE:
 AS NOTED

JOB NUMBER:

SHEET NO.

M-1

DRAWING NUMBER 1 OF 2



GENERAL NOTES:

1. ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH 2021 IMC/2021 IECC/2021 IPC AND ANY/ALL APPLICABLE STATE AND LOCAL AMENDMENTS.
2. MECHANICAL CONTRACTOR SHALL BE RESPONSIBLE FOR DESIGN/INSTALLATION OF ALL FIRE/ LIFE SAFETY SYSTEMS, AS REQUIRED.

KEYED NOTES:

- ① EXISTING GAS FIRED UNIT HEATER MOUNTED FROM STRUCTURE ABOVE TO BE REMOVED AND TURNED OVER TO OWNER/TENANT. GAS LINE AND FLUE UP THROUGH ROOF TO BE CAPPED AND SEALED.
- ② EXISTING GAS FIRED UNIT HEATER MOUNTED FROM STRUCTURE ABOVE TO BE REMOVED AND RELOCATED. VERIFY PROPER OPERATION IN FIELD.
- ③ EXISTING LOW PRESSURE NATURAL GAS PIPE MOUNTED FROM STRUCTURE ABOVE TO REMAIN.
- ④ EXISTING NATURAL GAS SERVICE/METER TO REMAIN.
- ⑤ EXISTING SANITARY LINE MOUNTED BELOW SLAB TO REMAIN. VERIFY EXACT LOCATION, SIZE AND INVERT PRIOR TO EXCAVATION.
- ⑥ RELOCATED GAS FIRED UNIT HEATER MOUNTED FROM STRUCTURE ABOVE. SERVICE, CLEAN AND VERIFY PROPER OPERATION
- ⑦ 1.25-INCH CONDENSATE DRAIN PIPE TO UNIT EVAPORATOR COIL. VERIFY EXACT LOCATION WITH WALK-IN SUPPLIER. ALL PIPING IN FREEZER SHALL BE INSULATED AND TRACED.
- ⑧ 2-INCH CONDENSATE DRAIN PIPE MOUNTED ON WALL AS HIGH AS POSSIBLE WITH 1/8-INCH SLOPE PER FOOT. ALL PIPE SHALL BE INSULATED.
- ⑨ 2-INCH CONDENSATE DRAIN PIPE DOWN TO 12"x24" SPLASH BLOCK AT GRADE.
- ⑩ RELOCATED GAS FIRED UNIT HEATER INTAKE/EXHAUST FLUE CONNECTED TO EXISTING FLUE UP THROUGH ROOF.
- ⑪ NATURAL GAS PIPE MOUNTED FROM STRUCTURE ABOVE.
- ⑫ NATURAL GAS PIPE CONNECTED TO EXISTING NATURAL GAS PIPE.
- ⑬ INTERIOR CONDENSATE CLEANOUT (TYPICAL).
- ⑭ INTERIOR CONDENSATE CLEAN OUT EXTENDED TO TOP OF FREEZER BOX FOR ACCESSIBILITY. (TYPICAL)
- ⑮ SEE STRUCTURAL DRAWINGS S-1 THROUGH S-3 FOR EXACT LOCATIONS AND ELECTRICAL DRAWINGS E-1 THROUGH E-6 FOR ELECTRICAL CONNECTIONS.

EXISTING/DEMO/NEW MECHANICAL FLOOR PLAN
 SCALE: 1/8" = 1'-0"

REVISIONS	BY

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