

B. Control Dampers

- 1. Control dampers shall be of the same construction as manual volume dampers...
C. Fire Dampers
1. Fire dampers shall be UL-listed and labeled for 1 1/2 hours and shall be provided with 160 degree F. links...

2.07 LOW-PRESSURE DUCT BRANCHES

- 1. Flexible dampers shall be provided at all low-pressure ductwork branches. All low-pressure ductwork branches shall be rounded or 45 degree take-offs...

2.08 FLEXIBLE DUCT

- A. Flexible ductwork shall be Class 1, UL 181 air duct and meet NFPA 90A and 90B Standards.
B. The internal duct surface shall be acoustically rated, black GPE bonded to a coated steel wire helix...
C. Flexible ductwork shall be suitable for 10" W.G. positive pressure and 1" W.G. negative pressure...

2.09 TERMINAL UNIT RUNOUTS

- A. Medium and high-pressure runouts to terminal units shall be connected to the trunk duct with factory-welded laterals, conical tees or bellmouth fittings...

2.10 FLEXIBLE CONNECTIONS

- A. Provide flexible duct connections at the inlet and outlet of each belt-driven fan, indoor unit, fan coil unit, or other equipment...

2.11 DUCT HARDWARE

- A. Duct hardware shall be as manufactured by Young Regulator or an approved equal.

2.12 ACCESS DOORS

- A. A duct access door shall be provided at each fire damper. Access doors shall be designed for 1.5 times the pressure of the duct in which they are mounted...

2.13 DUCT LINER

- A. Duct liner shall be one inch thick, 1 1/2 lb. density (3 lb. density on medium- and high-pressure supply air systems) fibrous glass with one face coated with a black fire retardant compound...

2.14 DUCT INSULATION

- A. Duct insulation shall be 2" thick, minimum 3/4 lb. density fiberglass with an FSXL 0.00035" thick aluminum foil jacket, reinforced with fiberglass scrim...
B. Insulation adhesive shall be Benjamin Foster 85-20. Tape shall be aluminum foil and shall be SMACNA listed and labeled.

3.0 EXECUTION

3.01 INSTALLATION

- A. Ductwork shall be installed in strict accordance with SMACNA, UL and NFPA standards.
B. Duct liner shall be provided for the following minimum distances or through the first elbow(s) or as otherwise indicated on the drawings...

3.02 FILTERS

- A. Units shall have minimum 1 inch thick, low velocity, glass fiber throwaway filters in commercially available sizes.

3.0 EXECUTION

3.01 INSTALLATION

- A. The split systems and associated controls shall be installed in strict accordance with the manufacturer's recommendations.
B. The control system shall be completely wired under this Division 15. Wiring shall be in accordance with the N.E.C. and shall meet all requirements for this installation.

3.02 STARTUP

- A. Provide the services of a factory trained and qualified service technician employed by the unit manufacturer who shall inspect the installation including external interlock and power connections, supervise leak testing, initial operation, calibration of operating and safety controls and supervise electrical testing including insulation resistance of motors and voltage balance between phases during starting and running.

- E. Flexible ducts utilized in the low-pressure ductwork systems shall be installed without kinks or bends which are less than a centerline radius equal to or greater than twice the diameter of the flexible duct being installed...
F. All intersections (crossings) of low-pressure and medium-pressure ductwork shall be made with offsets in the low-pressure ductwork only.

END OF SECTION

SECTION 23066 REFRIGERANT PIPING SYSTEMS

1.0 GENERAL

- A.1.01 DESCRIPTION
A. All work specified in this Section is governed by the HVAC General Section 23010.

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A. All work specified in this Section is governed by the HVAC General Section 23010.

1.02 INTENT

- A. It is the intent of this Section of the specifications to provide complete and operable piping systems as shown and specified which are free of leaks, properly vented, free of noise, vibration and sweating, and fabricated so as to fit the space allotted and to exhibit a minimum resistance to fluid flow...
B. The word "piping" is defined to mean all piping, fittings, joints, hangers, coatings, valves, test and sensor wells and accessories necessary for the refrigerant piping systems described, shown and specified.

1.03 GENERAL REQUIREMENTS

- A. Provide all reducing fittings, flanges, couplings and unions of the size and type of material to match the piping to each piece of equipment, valve and accessory.
B. Union joints, couplings or flanges shall be provided in each pipe line connected to each piece of equipment and elsewhere as indicated and specified.

1.04 BASIS OF DESIGN

- A. The basis of design is Trane. Any proposed substitutions shall be submitted in accordance with the prior approval requirements.

2.0 PRODUCTS

2.01 UNIT CASINGS

- A. Unit casings shall be formed, galvanized steel construction with welded assembly. Galvanized steel surfaces shall be bonderized and painted with baked acrylic enamel for complete weather protection...
B. Condensing unit condenser fans shall be direct-driven, propeller blade type. Condensing unit heat rejection shall be vertically upward.

2.03 COILS

- A. Evaporator and condenser coils shall be copper tubing mechanically bonded by heavy duty aluminum fins. Aluminum tubes shall not be acceptable.

2.04 ELECTRIC HEATING SECTIONS

- A. Electric heating sections shall be UL listed with nickel-chromium open coil resistance heating elements. Each heater shall be protected by an automatic reset high-limit thermostat and manual reset high-limit thermostat for the primary and secondary overcurrent/thermal protection.

2.07 CONTROLS AND ACCESSORIES

- A. All operating and safety controls which are internal to each unit shall be factory installed and shall include, as a minimum, solid state compressor overload protection, magnetic contactors, thermostatic expansion valve(s), refrigerant line drier(s), outdoor fan and compressor cycling thermostats, high and low limit protection against excessive temperatures or pressures.
B. A 24 volt transformer shall be provided to accommodate an accessory 24 volt indoor thermostat complete with an electronic programmable night setback, separate automatic heat/cool settings, auto/manual fan control and seasonal selector.

2.08 FILTERS

- A. Units shall have minimum 1 inch thick, low velocity, glass fiber throwaway filters in commercially available sizes.

3.0 EXECUTION

3.01 INSTALLATION

- A. The split systems and associated controls shall be installed in strict accordance with the manufacturer's recommendations.
B. The control system shall be completely wired under this Division 15. Wiring shall be in accordance with the N.E.C. and shall meet all requirements for this installation.

3.02 STARTUP

- A. Provide the services of a factory trained and qualified service technician employed by the unit manufacturer who shall inspect the installation including external interlock and power connections, supervise leak testing, initial operation, calibration of operating and safety controls and supervise electrical testing including insulation resistance of motors and voltage balance between phases during starting and running.

- B. This service technician shall forward a report in four (4) copies to the Owner when the unit is in safe and proper operating condition. This report shall include all pressure and control settings, meg readings, voltage readings per phase during start and run, and shall list minor discrepancies to be corrected...

END OF SECTION

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- E. Intermediate pipe supports shall be provided between building structural members so as not to exceed maximum support spacing specified and shall be structural steel angles (minimum 2 1/2" x 2 1/2" x 1/4"). In steel construction, intermediate supports shall be securely clamped to steel beams and to steel joists, and in no case shall supports be attached to roof decks...
F. For suspending pipes from concrete beams, upper attachments shall be side beam bracket utilizing bolts in sleeves set in top portions of the beams.

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ABBREVIATIONS

Table with 2 columns: Abbreviation and Full Name. Includes entries like A/C ABOVE CEILING, AD ACCESS DOOR, ADJ ADJUSTABLE, AFF ABOVE FINISHED FLOOR, AUTO AUTOMATIC, AC AIR CONDITIONING, AHU AIR HANDLING UNIT, BAL BALANCING, BACKDRIFT DAMPER, etc.

LEGEND

Table with 2 columns: Symbol and Description. Includes symbols for ceiling diffuser, return air grille, side-wall or duct mounted register, slot diffuser, manual volume damper, fire damper, thermostat, humidistat, night set-back, motor operated damper, existing work, new work, work to be removed, floor drain, hose bibb, floor clean-out, wall clean-out, duct access panel.

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GENERAL NOTES

- 1. THESE DRAWINGS ARE SCHEMATIC IN NATURE AND ARE NOT INTENDED TO SHOW ALL POSSIBLE CONDITIONS. IT IS INTENDED THAT A COMPLETE TENANT MECHANICAL SYSTEM BE PROVIDED WITH ALL NECESSARY EQUIPMENT, ACCESSORIES, OPTIONS AND CONTROLS, COMPLETELY COORDINATED WITH ALL DISCIPLINES...
2. REFER TO THE ARCHITECTURAL DRAWINGS FOR EXACT PARTITION LAYOUTS, REFLECTED CEILING PLANS, DIMENSIONS, ETC.
3. EXISTING MECHANICAL EQUIPMENT AND DUCTWORK ARE SHOWN BY DASHED LINES. NEW WORK AND RELOCATED WORK ARE SHOWN BY SOLID LINES...

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Table with 2 columns: Date and Description. Includes entries like 08.18.2017 ISSUE FOR PERMIT AND CONSTRUCTION.

Seal / Signature
STATE OF MARYLAND
BRAD J. RABNOWITZ
No. 15176
LICENSED PROFESSIONAL ENGINEER
08/18/17

Project Name
Unum Workplace Transformation- Phase 1 (H02)

Project Number
59.6481.000

59.6481.000

DESCRIPTION
SPECIFICATIONS, NOTES, AND SCHEDULES - HVAC

Scale

SPLIT SYSTEM SCHEDULE

Table with columns: I.D., TAO, MINIMUM TOTAL CAP. (BTUH), MINIMUM SENSIBLE CAP. (BTUH), AIRFLOW (CFM), OUTSIDE AIR (CFM), EXT. S.P. (N. W.C.), MAX. H.P., COL. EAT, VOLTS/PHASE, DRIVE, MAX FAN RPM, TYPE OF UNIT, HEATING SECTION TYPE, CAPACITY, AMBIENT TEMP. (°F), VOLTS/PHASE, STAGES, MIN. EEP, BASIS OF DESIGN, REMARKS.

- 1 THIS IS THE SP EXTERNAL TO THE ENTIRE FAN COIL UNIT ASSEMBLY (WET COIL, CASING, CLEAN FILTERS, AND FURNACE LOSSES ARE NOT INCLUDED IN THIS EXT. SP.)
2 PROVIDE WITH 7 DAY PROGRAMMABLE WALL THERMOSTAT LOCATED AS SHOWN ON PLANS AND INTERLOCK WITH BMS. UNIT SHALL OPERATE AS STANDALONE IN THE EVENT THE BMS SYSTEM CONNECTION IS LOST.
3 THIS IS THE MINIMUM OUTPUT CAPACITY (IN BTUH FOR GAS AND IN KW FOR ELEC.)
4 PROVIDE WITH CONDENSATE PUMP WHERE GRAVITY FEEDING IS NOT POSSIBLE. COORDINATE WITH DIVISION 26.
5 INTERLOCK MOD SO THAT MOD IS OPEN WHEN FAN IS ENERGIZED.
6 PRIMARY HEATING SHALL BE THROUGH THE HEAT PUMP SECTION. THE ELECTRIC HEAT SHOWN IS FOR EMERGENCY HEATING ONLY.

M1.003