the individual U300 Series Wall and Partition Designs in the UL Fire Resistance Directory and shall include the following construction features: A. Studs — Nom 2 by 4 in. (51 by 102 mm), 2 by 6 in. (51 by 152 mm) or double nom 2 by 4 in. (51 by 102 mm) lumber studs. B. Sole Plate — Nom 2 by 4 in. (51 by 102 mm), 2 by 6 in. (51 by 152 mm) or parallel 2 by 4 in.. (51 by 102 mm) lumber plates, tightly butted.

C. Top Plate — The double top plate shall consist of two nom 2 by 4 in. (51 by 102 mm), two nom 2 by 6 in., (51 by 102 mm) or two sets of

). Gypsum Board* — Thickness, type, number of layers and fasteners shall be as specified in the individual Wall and Partition Design.

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January 21, 2015

parallel 2 by 4 in.. (51 by 102 mm) lumber plates, tightly butted. Max diam of opening is 5 in. (127 mm).

Max diam of opening is 5 in. (127 mm).

Hilti Firestop Systems

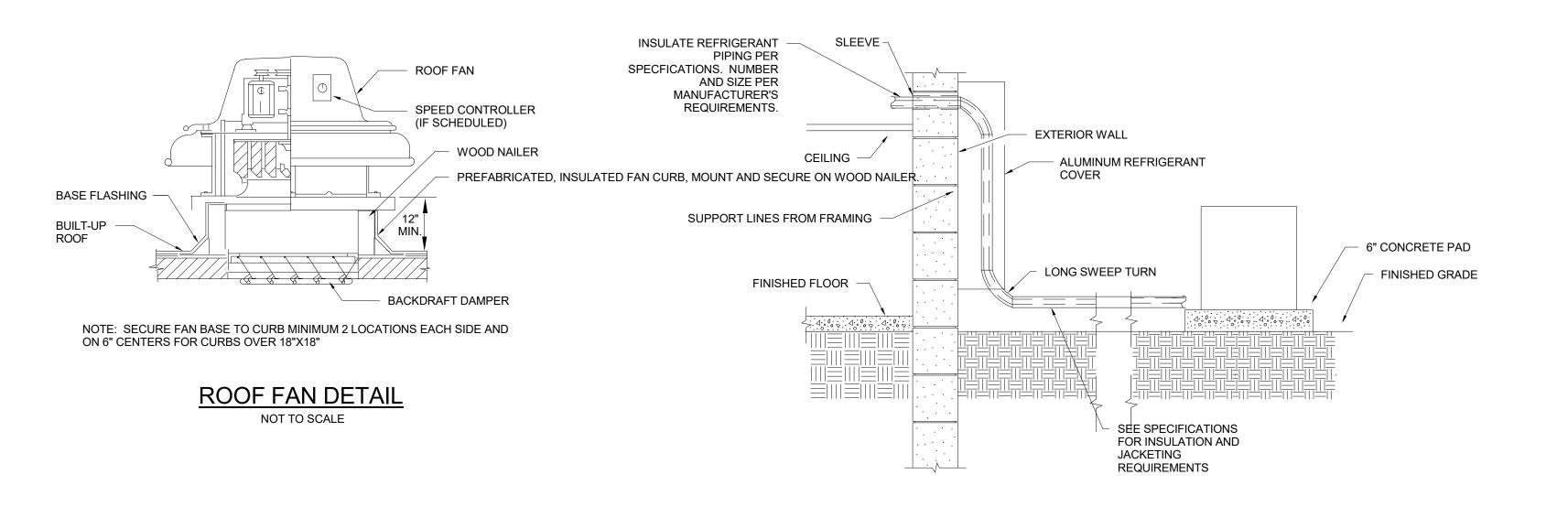
System No. F-C-8026 2. Through Penetrants — One or more pipes, conduits, tubing and cables to be installed concentrically or eccentrically within the opening. The space between any penetrant, except nonmetallic pipes and uninsulated metallic pipes to be min 0 in. (point contact) to max 1 in. (25 mm). The space between any penetrants and the periphery of the opening shall be min 0 in. (point contact) to max 1 in. (25 mm). Pipes, conduits, tubing and cables to be rigidly supported on both sides of floor-ceiling assembly. A. Metallic Penetrants — One or more metallic pipes, conduits or tubing to be installed within the firestop system. The following types and sizes of metallic pipes, conduits or tubing may be used: A1. Steel Pipe — Nom 3/4 in. (19 mm) diam (or smaller) Schedule 10 (or heavier) steel pipe. A2. Conduit — Nom 3/4 in. (19 mm) diam (or smaller) steel electrical metallic tubing (EMT) or 3/4 in. (19 mm) diam galv steel conduit. A3. Copper Tube — Nom 3/4 in. (19 mm) diam (or smaller) Type L (or heavier) copper tube. A4. Copper Pipe — Nom 3/4 in. (19 mm) diam (or smaller) Regular (or heavier) copper pipe. B. Tube Insulation - Plastics+ — Nom 3/4 in. (19 mm) thick acrylonitrile butadiene/polyvinyl chloride (AB/PVC) flexible foam furnished in the form of tubing. Tube insulation to be installed on one or more of the metallic pipes or tubes (Item 2A). See Plastics+ (QMFZ2) category in the Plastics Recognized Component Directory for names of manufacturers. Any Recognized Component tube insulation material meeting the above specifications and having a UL 94 Flammability Classification of 94-5VA may be C. Nonmetallic Through Penetrants — One nonmetallic pipe to be installed within the firestop system. Pipe shall be spaced a min 1-1/2 in. (38 mm) from non-uninsulated metallic through penetrants. The following types and sizes of metallic pipes may be used: C1. Polyvinyl Chloride (PVC) Pipe — Nom 1-1/4 in. (32 mm) diam (or smaller) Schedule 40 solid core PVC pipe for use in closed (process or supply) or vented (drain, waste or vent) piping system. C2. Chlorinated Polyvinyl Chloride (CPVC) Pipe — Nom 1-1/4 in. (32 mm) diam (or smaller) SDR13.5 CPVC pipe for use in closed (process or supply) piping systems. D. Cables — Max of two 4 pair No. 18 AWG (or smaller) cable with PVC insulation and jacket materials. 3. Fill, Void or Cavity Materials* - Sealant — Min 3/4 in. (19 mm) thickness of sealant applied within the annulus flush with the top surface of the floor or sole plate and min 5/8 in. (16 mm) thickness of sealant applied within the annulus flush with the bottom surface of gypsum board or top plate. A min 1/2 in. (6 mm) diameter bead of sealant applied at the bundle/subflooring or sole plate interface and the bundle/gypsum board or top plate interface at point contact locations. HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — FS-ONE Sealant or FS-ONE_MAX Intumescent Sealant * Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), +Bearing the UL Recognized Component Mark produced by HILTI, Inc. Courtesy of Underwriters Laboratories, Inc. January 21, 2015 **Hilti Firestop Systems**

ACCESS DOORS, BOTTOM OR SIDE, BOTH SIDES OF HAND VOLUME DAMPER CONDITIONED SUPPLY AIR SUPPLY AIR AIR INLET HOOD FURNACE/COOLING BLOWER SECTION COIL SECTION 6" THICK CONCRETE SLAB ELECTRIC DUCT HEATER INSTALLATION
NOT TO SCALE (3" ABOVE GRADE) - EXTEND 6" BEYOND UNIT ALL AROUND

GAS-FIRED DEDICATED OUTDOOR AIR UNIT MOUNTED AT GRADE

NOT TO SCALE

TYPICAL REFRIGERANT PIPING DETAIL



ATTIC ASSEMBLY ROUTE TO EXTERIOR AND TERMINATE WITH AN EXTERIOR WALL CAP WITH FLAPPER-TYPE BACKDRAFT DAMPER. SUBMIT CAP TO ENGINEER FOR APPROVAL. TOTAL EQUIVALENT VENT LENGTH NOT TO INSTALL LABEL EXCEED 35 FEET UNLESS LONG VENT DRYERS ARE ON WALL BEHIND DRYER. PLACE LABEL ADJACENT INSTALLED BY THE CONTRACTOR. TO DRYER BOX RIGID PIPE NOT TO EXCEED 2" THROUGH 4-INCH RIGID METAL DRYER BOX - DRYERBOX FLEX TRANSITION HOSE - SEE DETAIL -REFER TO NOTES BOTTOM OF DRYERBOX SHOULD BE 4 1/2" NOTE: STACKABLE WASHER/DRYER ABOVE CENTER OF IS SHOWN, SIDE-BY-SIDE DRYER EXHAUST APPLIANCES WILL HAVE SIMILAR, BUT LOWER DRYERBOX MOUNTING HEIGHT.

NOTES:

1. USE IN-O-VATE DRYERBOX, 22 GAUGE ALUMINIZED STEEL 0.018. MODEL 425 IS SHOWN IN A 2X6 STUD WALL. SELECT MANUFACTURER'S RECOMMENDED MODEL BASED ON WALL CONDITION OF DRYER VENT INSTALLATION.

2. MECHANICAL CONTRACTOR SHALL BE RESPONSIBLE FOR RUNNING ALL DUCTWORK FOR THE DRYER EXHAUST SYSTEM. ALL CONCEALED DRYER DUCTING MUST BE RIGID METAL (GALVANIZED OR ALUMINUM) MINIMUM OF 4" IN DIAMETER, SMOOTH 26 (0.016 INCH THICK MINIMUM) GAUGE CLEAN, UNOBSTRUCTED, FRICTIONLESS DUCTS (NO FLEXIBLE DUCT ALLOWED IN CONCEALED AREAS). SEAL ALL JOINTS WITH FOIL BACKED PRESSURE SENSITIVE DUCT TAPE MEETING THE REQUIREMENTS OF UL 181. DUCT JOINTS SHALL BE INSTALLED SO THAT THE MALE END OF THE DUCT POINTS IN THE DIRECTION OF THE AIRFLOW. DO NOT USE RIVETS OR SCREWS IN THE JOINTS OR ANYWHERE ELSE IN THE DUCT AS THESE WILL ENCOURAGE LINT COLLECTION.

3. DRYERBOX RECEPTACLE SHALL BE METAL AND BE INSTALLED TO PERMIT THE PROPER AND SAFE COLLECTION OF THE DRYER TRANSITION HOSE. DRYERBOX SHOULD BE LOCATED AT OR NEAR THE CENTERLINE OF THE PROPOSED DRYER APPLIANCE. RIGID DUCT SHOULD PENETRATE DRYERBOX PORT 2 INCHES TO PROVIDE FOR FUTURE CONNECTION AND STORAGE OF TRANSITION HOSE. DRYERBOX SHOULD BE CAULKED AND THEN PAINTED WITH THE TRIM PAINT.

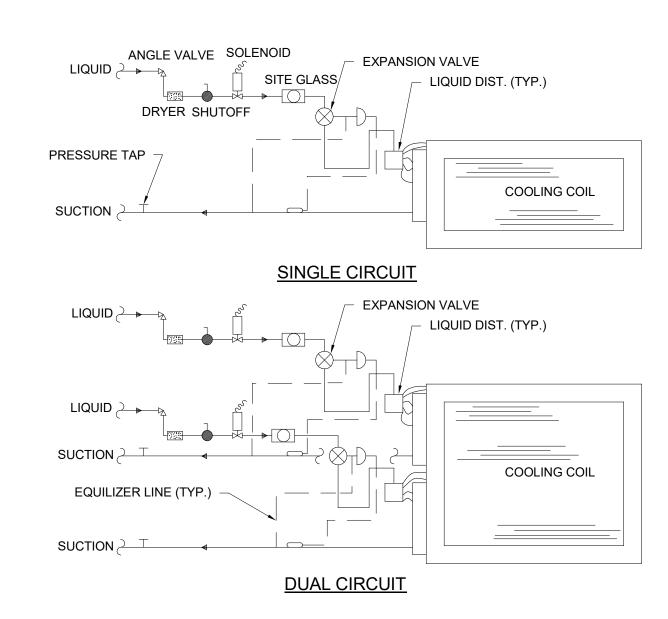
TYPICAL DRYER VENTING DETAIL NOT TO SCALE

A PERMANENT LABEL SHALL BE MOUNTED IN EACH DRYER CLOSET WITHIN 6 FEET OF DRYER EXHAUST CONNECTION TO THE DRYER. SUBMIT LABEL TO ARCHITECT FOR APPROVAL, LABEL SHALL BE READ AS FOLLOWS WHERE LENGTHS AND QUANTITIES ARE FILLED IN BY THE INSTALLING CONTRACTOR:

INSTALL A DRYER THAT IS RATED BY THE MANUFACTURER TO EXHAUST THROUGH THE INDICATED LENGTH AND WALL CAP. HORIZONTAL ____ FT VERTICAL ____FT OF 90 DEGREE ELBOWS OF 45 DEGREE ELBOWS

STANDARD VENT DRYER LABEL DETAIL

NOT TO SCALE



4'-0" MINIMUM - STRAIGHT DUCT

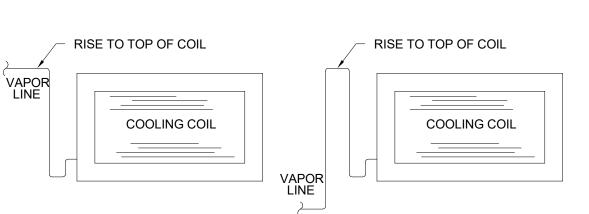
15 DEGREES

MAXIMUM

COIL.

15 DEGREES

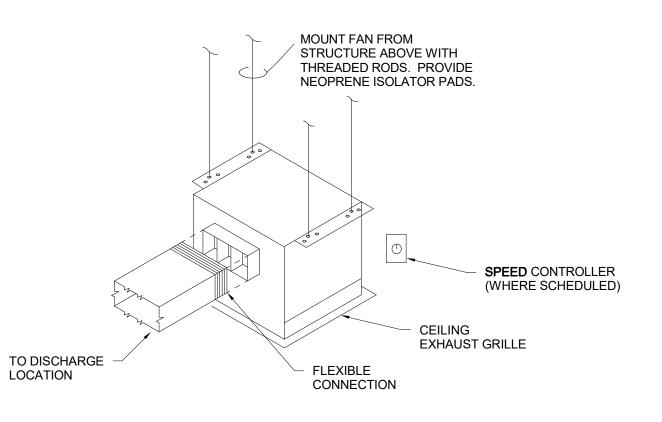
MAXIMUM



VAPOR LINE TRAPPING

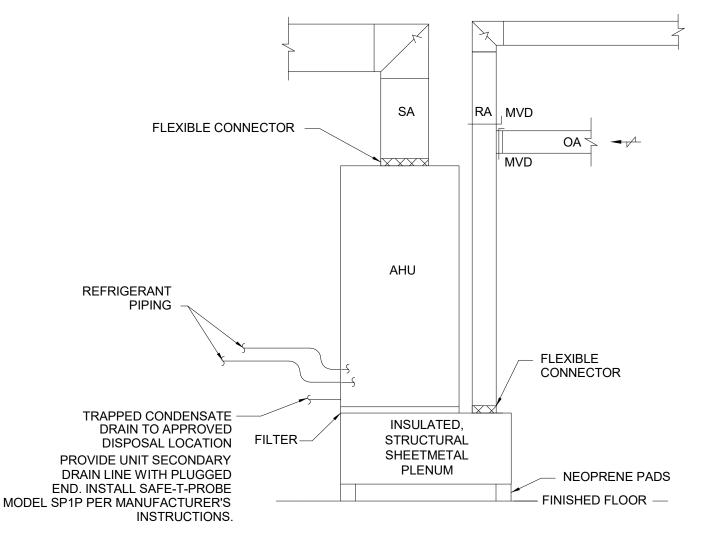
1. SUCTION LINE MUST RISE TO THE TOP OF THE EVAPORATOR WHEN THE EVAPORATOR IS ABOVE OR ON THE SAME LEVEL AS THE COMPRESSOR TO PREVENT LIQUID MIGRATION TO THE COMPRESSOR DURING THE 'OFF' CYCLE. 2. OIL TRAPS MUST BE INSTALLED AT THE BOTTOM OF EACH SUCTION RISER (THIS IS THE VAPOR LINE IN HEATING MODE)ON HEAT PUMP UNITS. 3. ALL REFRIGERANT PIPING IS TO BE RUN IN RIGID. TYPE HCR COPPER PIPING TO AVOID ANY SAGS OR DIPS THAT PROHIBIT PROPER OIL RETURN. 4. INSTALLATION AND REFRIGERANT LINE SIZING MUST COMPLY WITH THE MANUFACTURER'S ENGINEERING HANDBOOK GUIDELINES AND INSTALLATION INSTRUCTIONS FOR PARTICULAR EQUIPMENT MODELS. 5. INSULATE ALL REFRIGERANT PIPING PER SPECIFICATIONS 6. EQUIPMENT MANUFACTURER SHALL BE RESPONSIBLE FOR SIZING AND DESIGN OF ALL REFRIGERANT LINES BASED ON EQUIPMENT LOCATION, ELEVATION DIFFERENCES, DISTANCE BETWEEN CONDENSING UNIT AND AIR HANDLING UNIT, ETC. REFER TO MANUFACTURERS INSTALLATION GUIDELINES FOR INSTALLATION OF ALL REFRIGERANT LINES.

TYPICAL DX COIL PIPING DIAGRAM NOT TO SCALE

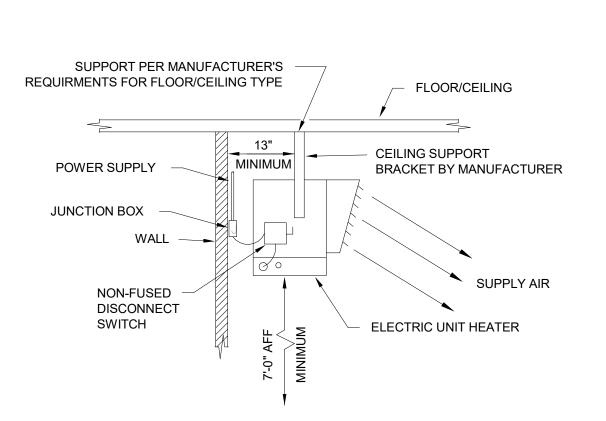


1. FURNISH WITH BACKDRAFT DAMPER ON FAN DISCHARGE

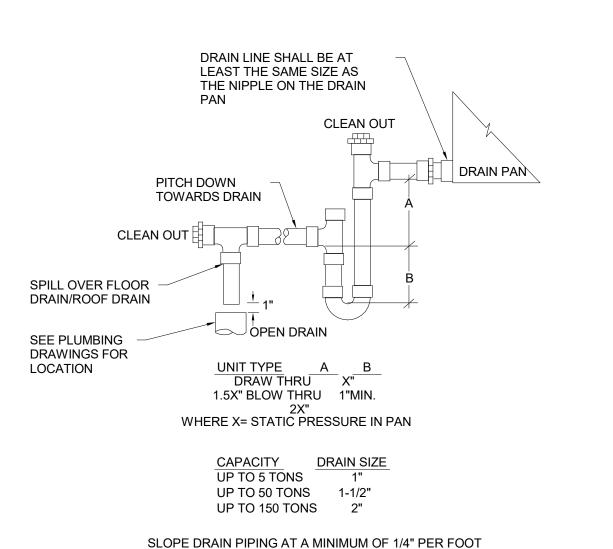
CEILING EXHAUST FAN DETAIL NOT TO SCALE



VERTICAL AIR HANDLING UNIT DETAIL NOT TO SCALE



ELECTRIC UNIT HEATER DETAIL NOT TO SCALE



AIR CONDITIONING UNIT DRAIN TRAP DETAIL NOT TO SCALE

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