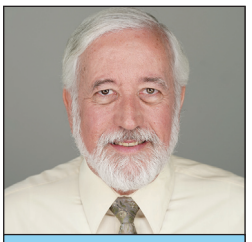
MECHANICAL CODE DISCUSSION

Common Air Conditioning Installation Code Violations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WITH THE START OF air conditioning season within the next month, a review of common International Residential Code (IRC) violations is appropriate. Please see IRC Section M1411 Heating and Cooling Equipment for complete code text. Please note Code text quoted here is *italicized.*

M1411.2 Refrigeration coils in warm-air furnaces.

Cooling coils shall not be located upstream from heat exchangers unless listed and labeled for such use.

During my career as an inspector, I encountered this quite often, typically in downflow applications.

M1411.3 Condensate disposal.

Condensate from cooling coils and evaporators shall be conveyed from the drain pan outlet to an approved place of disposal. Such piping shall maintain a minimum horizontal slope in the direction of discharge of not less than 1/8 unit vertical in 12 units horizontal (1-percent slope).

Too often plugged condensate drains are the result of having flat, reverse grade, or sagging drain lines.

M1411.3.1 Auxiliary and secondary drain systems.

In addition to the requirements of Section M1411.3, a secondary drain or auxiliary drain pan shall be required for each cooling or evaporator coil where damage to any building components will occur as a result of overflow from the equipment drain pan or stoppage in the condensate drain piping.

This section and sub-sections are lengthy and should be reviewed carefully for the overflow pan and safety switch requirements, as damage to building components is frequent due to frozen evaporator coils thawing and dumping ☛

☛ gallons of water from above on a finished ceiling.

M1411.3.2 Drain pipe materials.

Components of the condensate disposal system shall be ABS, cast iron, copper, cross-linked polyethylene, CPVC, galvanized steel, PE-RT, polyethylene, polypropylene or PVC pipe or tubing. . . . Condensate waste and drain line size shall be not less than 3/4-inch (19 mm) nominal diameter from the drain pan connection to the place of condensate disposal.

Reducing the coil drain connection to a 1/2" barbed hose fitting is not and has not been code complaint for decades. Using such a reducing fitting result in a stand pool of smelly swamp water in the coil drain pan.

M1411.3.3 Drain line maintenance.

Condensate drain lines shall be configured to permit the clearing of blockages and performance of maintenance without requiring the drain line to be cut.

This recent addition to the code (2015 IRC) simply requires a tee, union, or similar method at the equipment location, allowing access to clear a plugged condensate drain.

M1411.4 Condensate pumps.

Condensate pumps located in uninhabitable spaces, such as attics and crawl spaces, shall be connected to the appliance or equipment served such that when the pump fails, the appliance or equipment will be prevented from operating. Pumps shall be installed in accordance with the manufacturer's instructions.

Every condensate pump includes an overflow safety switch. Please take that extra few minutes to break power to the condenser when the pump fails.

M1411.6 Insulation of refrigerant piping.

Piping and fittings for refrigerant vapor (suction) lines shall be insulated with insulation having a thermal resistivity of not less than R-3 and having external surface permeance not exceeding 0.05 perm [2.87 ng/(s × m2 × Pa)] when tested in accordance with ASTM E96.

Damaged insulation should fail an inspection. Dripping suction lines in ceiling cavities may result in serious mold issues.
A common sense item.

M1411.7 Location and protection of refrigerant piping.

Refrigerant piping installed within 1-1/2 inches (38 mm) of the underside of roof decks shall be protected from damage caused by nails and other fasteners.

Another common sense item. Let's take it one step further and make sure line sets ran in wall cavities are not placed tight against the exterior sheathing where the siding/stucco lath staples will penetrate the lines.

M1411.8 Support of refrigerant piping.

Refrigerant piping and tubing shall be securely fastened to a permanent support within 6 feet (1829 mm) of the condensing unit.

The last item in this discussion is new in the 2021 IRC, specifically identifying support requirements. I've observed some pretty sloppy sagging lines running down or across an exterior wall.

Thanks again for your support, comments, and questions. —Brent ■