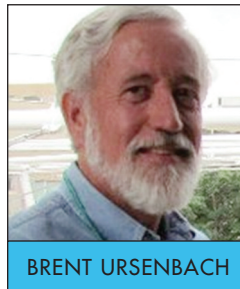


# MECHANICAL CODE DISCUSSION

## Is Code Compliance Required for Retro-fit/Replacement HVAC Systems?



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THE RETROFIT MARKET FOR residential, commercial and public buildings is being driven by aging existing systems, energy and environmental concerns, and efforts to improve comfort and health with buildings. Too often, the retrofit contractor simply replaces like for like, rather than evaluating the entire building, addressing the current conditions and deficiencies in the building and HVAC systems. The number of calls I receive concerning customer dissatisfaction is on the increase, often with multiple calls each week. My comments will generally address residential systems; however, the same consideration must be given to commercial systems.

### **Referencing the 2015 International Residential Code:**

**R105.1 Required.** *Any owner or owner's authorized agent who intends to construct, enlarge, alter, repair, move, demolish or change the occupancy of a building or structure, or to erect, install, enlarge, alter, repair, remove, convert or replace any electrical, gas, mechanical or plumbing system, the installation of which is regulated by this code, or to cause any such work to be performed,*

*shall first make application to the building official and obtain the required permit.*



Any new work performed to alter, enlarge or replace a system must comply with the code. In other sections of the code we find exceptions to permits for the replacement of components within systems, i.e. permits are not required to replace a motor, gas valve or control board. The focus of this discussion is the responsibility we have, to insure compliance with the current requirements in the IRC, IMC and IFGC, and **to address the customer's expectations**, when replacing or installing new HVAC systems.

### **Load Calculations, Duct Design, Equipment Selection**

#### **2015 IRC:**

**M1401.3 Equipment and appliance sizing.** *Heating and cooling equipment*

*and appliances shall be sized in accordance with ACCA Manual S or other approved sizing methodologies based on building loads calculated in accordance with ACCA Manual J or other approved heating and cooling calculation methodologies.*

**M1601.1 Duct design.** *Duct systems serving heating, cooling and ventilation equipment shall be installed in accordance with the provisions of this section and ACCA Manual D, the appliance manufacturer's installation instructions or other approved methods.*

#### **Please consider:**

- Is a load calculation performed on every home prior to the replacement or the addition of new HVAC systems? Jurisdictions generally have not required load submission for retro-fit permits, in part, because they do not want to delay the contractors, who regularly comply with their responsibility as a licensed contractor to obtain permits.
- Does a discussion occur with homeowners, identifying problem areas, expectations and energy efficiency improvements made to the home? A deficiency identified in the bid process, with options to improve, minimizes customer complaints after the installation is completed.

- Did you know, replacement windows in an older home might reduce the heating or cooling load 25%, or even more? With our climatic conditions, 300 square feet of single pane, metal framed window will have a heat loss exceeding 20,000 BTU/h, while 300 square feet of double frame, double coat lowE, vinyl framed window will have a heat loss less than 5,000 BTU/h.
- What is the impact of other efficiency improvements in the home; such as, attic insulation, insulated siding, air sealing and shading?
- Do you understand oversizing equipment will compound temperature imbalances in the home?
- Do you understand increasing air velocities in poor duct systems may dramatically increase turbulence and reduce, rather than increase air flow?
- Are duct systems surveyed where possible? Correcting deficiencies with take-offs, duct starters, tees and elbows at the furnace or air handler is far simpler during equipment replacements.
- Have installers and technicians received training on duct fitting design, so they will recognize a defect and correct it. Do they build new defects into a system (see photo)?
- Do you consider the pressure drop created by coils, pleated filters, registers, grills and dampers when selecting the replacement equipment?

- Do you insure the venting is code compliant when replacing equipment?

The dramatic increased interest in energy efficiency is evident in the high efficiency equipment produced and installed today. The very finest 96% AFUE or 20 SEER equipment will not operate correctly or efficiently if installed incorrectly. The ACCA Standards, Manual J, D, S and others are based on building sciences, not rules of thumb. Following these Standards will minimize call backs, increase efficiency and result in satisfied customers.

*As we enter the Holiday Season, may each of you enjoy peace and joy with those close to you. —Brent ■*

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Over the past several years, the Rocky Mountain Gas Association has built an impressive reputation. Because ours is a respected organization the association's name and logo constitute a strong positive identity for your organization.

Use the RMGA brand to enhance your company's name. When noted prominently in your communications, RMGA membership differentiates your company from others. It demonstrates a number of positive aspects of your company.

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