

MECHANICAL CODE DISCUSSION

ACCA Load Calculations, Duct Design and Equipment Selection



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AS DISCUSSED SEVERAL TIMES in this column, the International Codes have required residential HVAC systems to meet the requirements of ACCA Manual J, D, and S, since the 2000 (first) edition of the “I” Codes. In recent years, inspectors and plans examiners have attended trainings on these design standards and are attempting to enforce these code requirements. Many of you are aware; the RMGA has sponsored and continues to sponsor classes on this subject for contractors and code officials. Understanding and applying these principles has become critical as homes are built many times more energy efficient than homes built in the past several decades.

Over the next several issues of the *Pipeline*, we will discuss some of the benefits, challenges and problems that may be occurring as homes are built efficiently, equipment sizes are reduced, and as whole house ventilation becomes a critical necessity. Please reach out to me with questions or concerns you may have on this subject, so I can address those issues for all.

Please consider the following partial list of issues I plan to address, several which are a revisit from previous discussions:



- Incorrect data is used in the load calculation; specifically window U-factors and insulation R-values.
- Builders fail to insulate per the plans, RES check or load calculations.
- HVAC contractors might blame deficiencies in an HVAC system on the code ‘requiring a smaller system’, while in reality; the duct system was not installed as detailed in the Manual J duct design. Poor fitting design is the number one issue here.
- Improper installation of flex duct products.
- Improper insulation of duct outside the thermal envelope.
- Poor airflow remains the number one issue energy raters are finding as they test duct systems for EnergyStar® and other above code programs. Rarely do they find a system moving 400 CFM per ton.
- Referring to manufacturers expanded performance data shows low airflow equals reduced sensible capacity, i.e., the 3 ton unit does not produce 3 tons of cooling inside the home if the airflow is low.
- Pressure drops across filters and coils are often ignored, again producing lower airflows.
- Building tightness and triggers for whole house ventilation.
- Whole house ventilation methods.
- Open combustion verses direct vent fuel burning appliances and the impact on whole house comfort and efficiency.

Again, please reach out to me with your questions, concerns or suggestions. My contact information:

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I appreciate emails with details, as my schedule often restricts my availability to take phone calls.

Thank You — I look forward to a spirited discussion on this subject, —

Brent ■