



SIP No. 2051

Subject: HVAC Design

Date: November 2007 (Revised January 2015)

All buildings should be analyzed by a HVAC professional to properly specify the heating, cooling, and ductwork to ensure desired performance.

Design factors to be considered include:

- Size of Building (each floor analyzed individually)
- Orientation of Building
- Type of Wall Construction (and associated R-value)
- Window information (number, location, insulation value, fenestration rating)
- Door information (number, location, insulation value, fenestration rating)
- Duct location (in heated space, in unheated space, in attic, in crawl space)
- Fireplaces (number, type)
- Air Infiltration

All these factors must be analyzed to provide an accurate HVAC design.

A rule of thumb approach is not suitable for HVAC design, especially with high performance systems such as SIPs.

A process for the accurate design of HVAC systems is available from the American Society of Heating, Refrigeration and Air-Conditioning Engineers, Inc. (ASHRAE). Detailed information on HVAC design is available in the ASHRAE Fundamentals Handbook.

ASHRAE publishes the ASHRAE Manual J procedures which are used to design the HVAC system.

R-Control SIPs provide inherent energy savings when used for walls and/or roof components on buildings. The energy savings can be attributed to two main factors:

1. Increased R-value
2. Lowered air infiltration

Applying Manual J calculations provides for the increased R-value and the reduced air infiltration of building with R-Control SIPs. These two factors will allow for downsizing of the heating and cooling equipment. This will provide immediate cost savings at the time of construction. In addition, proper sizing of the HVAC system will provide a more comfortable environment.

Architects/engineers, builders, building owners, and other building professionals have learned from experience that the energy savings for a typical SIPs structure can be 30-50%.

Note: Please also review Technical Bulletin sip no. 2000 for information on heat recovery ventilator requirements.



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