COLUMN FOR NOVEMBER 26, 2005.
HEADLINE; WHY ARE ATTICS VENTED?

Q: *We have a century home that we are hoping to gut and completely renovate. We would like to open up part of the ceiling to make it cathedral style. Our contractor is concerned about ventilation in this space and in the portion that will remain an attic. Why is so much ventilation necessary and what would you suggest?*

A: Your contractors concerns about controlling the flow of moisture by air leakage into the attic area are justified. Ventilation is required to limit possible moisture damage to the wood framework and insulation in the attic. This can happen if the air vapour and heat that has escaped from the interior of the home is contained in the attic over a long period of time. I have seen more than one rafter rotted out, especially where it rests upon the walls. A poorly vented attic will also allow ice dam conditions to happen. This condition is caused by the eave area becoming colder than the roof, due to this heat loss and moisture build-up in the attic; here the decking will usually decay first. An ideal attic area would be the same air temperature as the exterior. While this is rarely accomplished, the closer to this temperature the better. Recently I was called to investigate a home outside Ottawa with a three-year-old metal roof. It was a warm day after a cold evening and there was water flowing from under the metal roofing onto the metal valley. I was told the contractor had filled the area between the rafters with fibreglass insulation batts. The interior cathedral ceiling was finished in white cedar and it was severely water stained. I requested removal for spot checks and we found the vapour barrier was not correctly sealed and the insulation was soaking wet. All because the contractor did not correctly install the 6 mil barrier and properly vent the ceiling area. There should have been a minimum of 2 inches between the insulation and the roof decking and this could have been accomplished with about a hundred dollars worth of foam vent baffles, the repairs will be in the thousands of dollars.

First lets address the plans for a cathedral ceiling. The National Building Code under section 8.3.1 has clear definitions for venting, as does the Ontario Code. However as with many rules, there are exceptions. The National Code under subsection 1.(1) does make provision for manufactured homes that are proven to have an air tight assembly are not required to have attic ventilation. Recently in the USA the IRC building code made provision to allow for unvented attics if the assembly can be proven to be airtight. Their recommendations call for enough insulation to maintain an average monthly temperature of 45.F. This would be measured at the interior surface of the air impermeable insulation if it were applied directly to the interior roof structure. About a year ago I was in a century home that had been gutted to the stonewalls and hand hewn rafters. The contractor was a friend and I asked to see the insulation installation. They had just finished installing Icynene spray foam insulation in the wall cavities and over the entire roof assembly. He told me he got an engineers stamp for this installation and the township approved it. I have seen this done on three or four occasions since then. Spray foam has excellent air barrier properties as well as insulation value. Depending upon the installation, an inch of this material is approximately R-7 and I would try for at least R-32 in the ceiling areas. Have your contractor investigate this option.

The attic area could be addressed with conventional insulation methods and some modifications. The spray foam insulation is effective; it is also considerably more expensive than standard insulation. I contacted the reader and the home is a double brick assembly with no practical eave area to open up for venting. They intend to install a full 6-mil plastic barrier on the interior ceilings below the attic area. My suggestion is to spray the attic with cellulose insulation, to a minimum of 10 inches. This insulation will settle and I would hope for a final thickness of 8-9 inches. The reader is having new shingles installed and now two strategically placed turbines will be added to the job. The roof is a simple gable and small gable vents are included in this vent package. I also recommended that they start the shingles after installing a flat metal flashing on the roof to cover from the eave edge to a minimum of 12” past the vertical wall framework. While this is not the perfect installation, given the design of the home and the vapour/air barriers being installed, it should be sufficient. The area where the

attic and the cathedral ceiling intersect will also have to be correctly air barriered and insulated and some care should be taken here to ensure a full airtight assembly. If there is one area in a home that can cause long term water and structure issues, it is improper air barriers and lack of ventilation. The repairs are usually very costly.

Now the answer to last week's question. It was C) a muntin is a horizontal wood strip used to separate glass in windows and doors. Now this week's question. What is Western framing? Is it A) an early style of Braced Wood Framing B) another name for Platform Framing C) a method of wood framework used in adobe homes in the Mid-Western USA. The answer in next week's column.

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