3328

accepted, then manufacturers can produce equipment that is compatible among them.

For example, look what happened to TV video equipment (have you tried to use a SONY remote control on your SANYO VCR?) It don't work too well, does it? In a smart house, it would not matter which manufacturer's components you have, you should be able to mix and match.

The compatibility issue is going to be major stumbling block to be overcome. At the moment, the US **Smart House** project is being handled as a proprietary product - in other words only those companies that been accepted by the partners (and have bought into the project) will be allowed to use the standard for their products.

The development work on the SMART HOUSE in the USA is taking a long time to get off the ground. It is being done through a joint venture of a number of major utilities and manufacturing companies, with the coordination of the National Association of House Builders (NAHB).

It is not unlike the BETA VCR that was developed by SONY. It is a system that belongs to SONY, and they are the only ones producing equipment. The major competitor is the VHS system that was licensed to all who wished to use it (and which now has probably 80% of the total video market - even SONY is now producing VHS equipment).

Canadian Automated Building Association

Recently, a Canadian Automated Building Association has been established to provide a focal point in Canada for all parties interested in promoting the development, application and utilization of electrical, electronic and other advanced technologies related to automated building systems and services in the residential, commercial, industrial and institutional sectors.

The objectives of the Canadian organization are to ensure that systems, technologies, codes, standards, and other regulatory requirements are compatible, to provide forums for all interested parties to talk to each other during the development of standards and programs required to introduce products and technologies to the Canadian market; to demonstrate automated buildings, and to encourage Canadian industries to develop new business opportunities.

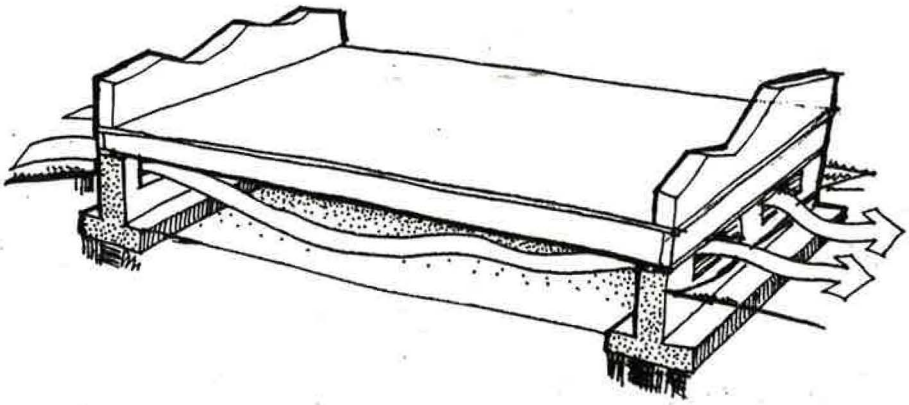
Richard Kadulski

CRAWL SPACE VENTILATION

Crawl spaces are complicated building zones that bridge the gap between conditioned space and the exterior. Many factors influence the conditions to be found in the space.

As crawlspaces are a part of the foundation system, the structural durability of the floor joists is critical for the life of the building.

Moisture, decay and insect infestation are the major problems associated with crawlspaces. Where they are insulated, heated crawlspaces seldom are a problem (they need not be vented outside, as some inspection authorities seem to insist on). It is the unheated, vented crawlspaces that can be sources of trouble, especially if the construction was not done properly in the first place.



Moisture and warm temperatures create ideal conditions for growth of mould, fungi and insects in organic materials. In other words, warm moist wood creates ideal conditions for all the nasty stuff that deteriorates frame buildings. (Remember that warm to

bugs and fungi is not necessarily the same as for humans.)

Is this a common problem? Wet crawl spaces have always been reported. The main sources of moisture are ground water, seeping or wicking up through the concrete, exterior surface water finding its way into the space, and interior water vapour migrating into the space and condensing on colder surfaces. Usually, it is a related to poor construction practices and inadequate attention to detail.

Placing a ground seal such as poly, on the floor of the crawl space will drastically reduce ground water migration up through the concrete into the crawlspace. It will not, however, deal with any bulk ground water seeping into the space through cracks and gaps in the foundation.

The main requirement for moisture control is crawlspace ventilation. The National Building Code requires that there be an unobstructed vent area of .1m^2 for each 50m^2 of floor area. It further states that vents for crawl spaces must be uniformly distributed on opposite sides of the building to allow for cross ventilation, reducing the possibility of stagnant air pockets.

But even if there are more vents than the code calls for, will there be enough air flow? To move air the crawlspace must be warmer than the outside, or wind must be blowing the air through the space.

Until recently, especially in milder climates, the floor over an uninsulated crawlspace was often not insulated or underinsulated, so that the space was indirectly heated from the space above. As we use more insulation, the crawl space becomes more of an exterior space, but shielded from the extremes of the outside environment. This means that surfaces will be colder, and relative humidity will be higher.

For timber structures, the moisture content of wood is critical. If it is over 20%, the potential for mould and insect damage increases.

A recent survey of moisture, decay and insect infestation in residential crawlspaces by the Bonneville Power Adminstration found that ventilation in larger quantities or a total lack of ventilation appears to reduce moisture problems.

Mechanically vented crawlspace

A recently built townhouse project in Vancouver was designed in a manner that made it difficult to provide open ventilation on opposite sides on each unit's crawlspace. After much consideration, the builder opted for a partial mechanical system.

The crawlspace is positively pressurized by a continuous airflow of prewarmed outdoor air at a rate of about 20 cfm (Average floor area was 800-900 sq.ft. per unit). In order to verify the effectiveness of the ventilation strategy, the project was monitored. The moisture content of the rim joist and sill plate were measured at intervals.

What was found? Unfortunately, the measurements of the moisture content were not done in a consistent manner, nor were the same units measured each time.

However, there is enough data to suggest that the lumber was not getting the chance to dry out. Between April and November 1988, readings hovered between 16-20%. While there was a slight drying (about 1-2%) it did not seem to be doing the job as visible wet spots were noted after one year.

It suggests that there was inadequate ventilation provided to the space. The insulation in the floor above the crawlspace kept exposed materials cooler, offering ideal surfaces for moisture condensation. The temperature difference between the space and the exterior was not high enough to generate natural convection currents to create adequate ventilation, and the mechanical air flow was not enough.

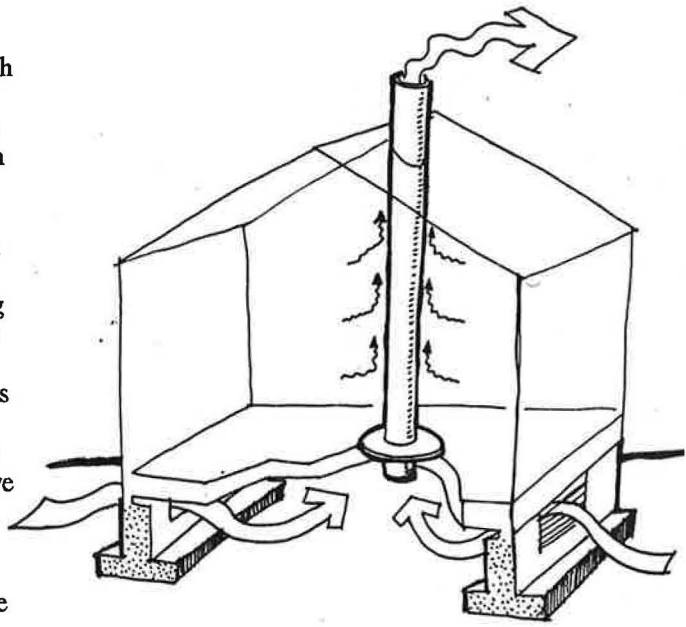
It may seem that a long hot summer should provide good drying conditions. In fact the opposite is true. Winter air is cold and dry, with little moisture, and will quicken the drying process.

During the summer, a crawlspace is cooled by the thermal mass of the ground. Warm exterior air (which will contain a large amount of moisture), is cooled as it is brought into the crawlspace, loosing its ability to hold water. Moisture will condense on any cool surface it comes in contact with. It's the same thing that happens when you pour that tall cool summer drink. Condensation forms almost at once on the exterior of the glass.

In very drafty houses during cold weather the entire house acts like a chimney. Warm air escapes through openings in the upper part of the house, to be replaced by cold air finding its way in through the lower parts of the house, including the crawlspace. The cold air moving through the crawlspace helps keep it dry.

Alternative Crawlspace Venting Strategy?

We have heard the following idea for passive venting of crawlspaces from several sources. On the surface it seems like a reasonable alternative.



The suggestion is that a sealed plastic vent pipe (3-4" diameter) be placed through an interior partition, open at the bottom into the crawlspace, and out through the roof. No part of this pipe is open to the interior. Theory suggests that the warm house will generate a stack action in the pipe and generate air flow up, thus

creating a draft that will ventilate the crawlspace.

This may be functional idea. However, we can't forget that cold glass on the table in a warm room. The cold air flowing through the vent cools the pipe, allowing condensation to happen on the vent, thus creating a moisture problem inside the house.

Is this a situation of solving one problem but creating another?

We welcome comments from readers who may have seen this type of installation.

Richard Kadulski

JOB-SITE INNOVATOR AWARDS PROGRAM

A program to encourage builders and tradespeople to develop and share new construction "tricks-of-the-trade" or techniques has been set up by Canada Mortgage and Housing Corporation. The goal is to make house construction or renovation easier, faster or more cost effective. Cash prizes are provided.

The contributor of the best "job-site innovation" of the year as judged by representatives of CMHC and CHBA, will receive travel expenses to attend the Home Builders Association annual convention to receive recognition by way of an "Innovator of the Year" award.

What is a "job-site innovation"?

It is any new construction method or technique which is immediately transferable to others in the building industry, without their having to purchase special equipment or products.

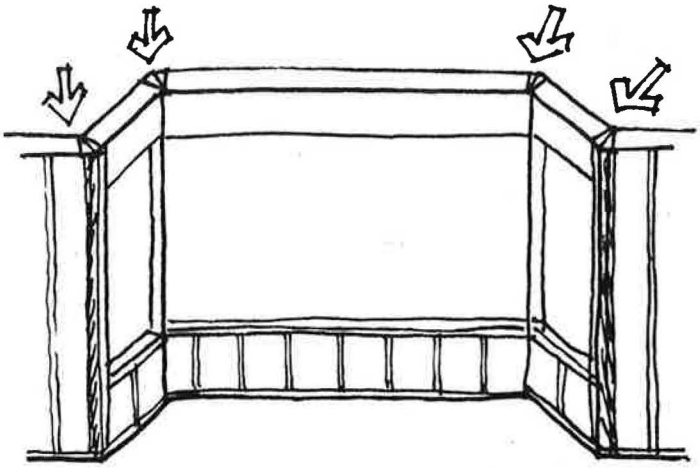
An innovation is most likely to qualify for an award if it:

- is an on-site demonstration of a new idea,
- is an easier, faster or cheaper way to do a job,
- provides an economical solution to an on-site technical problem,
- seems likely to attain wide general use by builders, renovators and tradespeople,
- produces results acceptable under the provisions on the National Building Code of Canada, CMHC'S Technical Builders Bulletin, minimum property standards for existing residential buildings and provincial or municipal regulations.

1988 Innovator of the Year

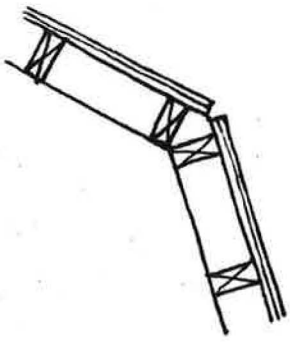
The first national "Innovator of the Year" Award was presented this year to John Church of United Properties Ltd. of Vancouver, B.C. at the CHBA convention in Hamilton, Ont.

The innovation was for a detail for framing corners greater than 90°.



The Problem

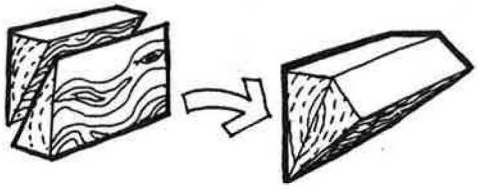
Framing and finishing of corners greater than 90°, such as those found in bay windows, poses a problem. Due to the angles involved, these corners generally do not have any blocking to support the exterior sheathing edges. The can cause siding to cup and stucco to crack at these unsupported corners.

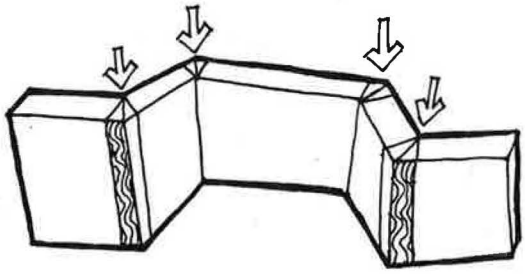


The Innovation

1. When framing, make sure that the top and bottom plates are mitred precisely to the required angle, and that the mitred corner is plumb from bottom to top plate.

2. Rip a stud diagonally, at the appropriate angle. Turn the pieces around so the "points" touch and nail together.





3. At United Properties, these corner pieces are pre-cut. The framer nails them together and installs them in the walls. The cost of doing this job is more than offset by a better job and less callbacks for cracking of interior and exterior finishes.

To find out more about the Job-Site Innovator Awards Program or to offer your idea, contact your local CMHC or Canadian Home Builders Association office.