

Search still on for leak-proof wall PANELS TESTED: Test hut allows close examination of designs

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Years after B.C.'s estimated \$2 billion leaky-condo crisis peaked and well into the province's enduring housing boom, the housing industry is still trying to create a better building envelope.

"The walls do a heck of a lot more than hold the roof up," says contractor Mark Gauvin, who has been in construction for more than three decades.

"I don't believe that we yet really understand what goes on behind the walls of these buildings.

"A contractor is always looking for a better way to build walls."



CREDIT: Les Bazso, The Province

Mark Gauvin shows various panels in the test hut on his company's building's roof.

So through his company, Gauvin 2000 Construction, he volunteered to participate in a project designed as an outdoor lab to see how various building-envelope designs withstand the West Coast climate over several seasons.

Gauvin constructed a 900-sq.-ft. building above his two-storey office building on Austin Avenue in Coquitlam with 28 wall panels, each with a different wall construction. There are seven on each side, plus six roof panels.

The study will compare the standard, old-fashioned face-sealed stucco construction popular years ago with rainscreen technology, which includes an air space, and a newer design. The panels are used with and without polyethylene to test how the air barrier may affect the wall's drying ability.

The test hut, built last fall and modelled after similar designs in other parts of Canada, the U.S. and Europe, is monitored by the building science department of Ontario's University of Waterloo.

Electronic sensors collect hourly data on temperatures, moisture levels and humidity to see how the panels hold up to rain, sleet, wind, sun and snow.

In the second year of the test, they'll introduce moisture to the panels to see how the different constructions dry, if they do leak.

"That's one question we're hoping to zero in on, whether polyethylene is suitable for the West Coast," says Prof. John Straube of the University of Waterloo. "We haven't seen

much difference between poly and no-poly walls over one winter.

"We may provide evidence for one side or the other."

The experiment will also focus on the building's energy efficiency capabilities and will collect data on interior conditions.

Straube says the study is not going to produce the smoking gun for B.C.'s widespread leaky-condo crisis.

"It's unfortunate that it can't be answered because so many people want that question answered."

Still, the data may contribute to building the "ultimate wall."

"What I call the ultimate wall is not what the developers may think is the ultimate wall," Straube says.

Rainscreen walls, because they are complicated to construct and require a number of layers and, therefore, a number of different tradespeople, are "very expensive," he says.

It's important to invest in research and development for building science, considering the housing industry is bigger than the auto, computer and airline industries put together "yet it spends a fraction" of what the other industries do on research, he says.

"The industry affects a lot of people really personally," he says.

The University of B.C. has tested different rainscreens in the past and the B.C. Institute of Technology is launching a similar test hut this summer, Gauvin says.

Allan Dobie, senior research consultant for the Canada Mortgage and Housing Corp., says these types of studies can eventually contribute to CMHC's best-practices guide.

"This is the kind of thing the industry has been looking for and needing. It is long overdue," Dobie says.

But Greg Johnson, an architect with Marceau Evans Johnson Architects who teaches building science at UBC, says these studies are "very research-oriented."

"It's trying to address only the technical issues but it [building science] is definitely an applied field," he says.

"Every building has its own peculiarities and, oftentimes, failures are the result of problems during construction," Johnson says, adding leaks are common at interfaces or in other details.

He says that no matter how good the design, it's only as good as the construction, and during busy building times, quality can be affected by a shortage of skilled labour.

Johnson says he wouldn't be surprised if B.C. has "some other issues" with buildings, even if they don't result in full-scale envelope failure.

"There are downsides to building booms," he says. "I'm hoping that won't be the case this time, but what I'm seeing, it probably is, so prepare yourself."