

Repairs to curtain wall caulking make office tower tenants comfortable again

When tenants complain about being too cold or too hot, it's not always a problem with the building's HVAC system. Often, it's a symptom of a faulty building envelope. Fortunately, there are experts available who can make speedy repairs that will give occupants an 'instant comfort boost'.

One place to find such experts is Canam Building Envelope Specialists, Inc., of Mississauga, Ontario. This company offers complete diagnostic, consultation and retrofit services to property managers, building owners and the architectural and building science community.

Sometimes a building envelope problem can jeopardize good relations between management and tenants. In the following example, the problem was easily solved.

When a major tenant of Cadillac Fairview's 20 Queen Street West property in downtown Toronto threatened to walk out over thermal discomfort, the building's management team realized it had to act fast.

Significant fluctuations in temperature from one side of the office tower to the other were a source of serious concern for the tenant, who occupied 17 floors. ECE Engineering, responsible for the building's mechanical systems, investigated and was able to rule out mechanical failure as the cause. The engineers suggested the problem might lie within the building envelope and Canam was asked to investigate. Canam subsequently brought in Mark Brook of Brook Van Dalen Associates Limited as building science consultant.

A telephone room halfway up the building was pressurized with a blower door, while a technician inside operated a theatrical smoke generator. The investigating team was able to instantly identify the problem thanks to its vantage point on an adjacent roof. Smoke was filtering out of the building at the vertical and horizontal mullion joints in the curtain wall.

To confirm their diagnosis, a swing stage was brought in, and several mullion caps were removed. It was at this point that they discovered the silicone caulk used at the vertical and horizontal junctions in the original construction of the building had failed.

“Most buildings are built to allow for some movement, so it’s imperative that a suitable seal – one that can bend and stretch – is used,” says Mark Brook. “In this case it wasn’t a building error; the material just failed.”

Although everyone hoped the work could be performed from the outside, it quickly became evident that it would be faster and easier to go inside the building for this job. In order to cause as little disruption to tenants as possible, the work was scheduled for after office hours.

The Canam team drilled holes on either side of the mullions and used two-component frothed-in-place foam to plug 3x6-inch areas of the vertical mullions, effectively closing off the vertical pathways in the air barrier. The crew decided that only every second floor needed attention in order to solve the problem. If any comfort complaints had come in from other floors after the project’s completion, Canam would have dealt with each situation locally.

Canam’s experts see one to three jobs a year where a curtain wall has failed. One recent example was a Halifax building where holes were drilled for the installation of a new heating system. These holes went straight through the mullions, causing air to whistle around the hot water convector heating pipes.