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## BUILDING TECHNOLOGY



TANNIS TOOHEY/TORONTO STAR

Paolo Palamara of Diamante in front of the Florian sales office, which incorporates curtain-wall design. Diamante was the first builder to adapt the technology for residential developments.

# Curtain rising on glass walls

High-profile projects are trading concrete walls for massive windows thanks to 'curtain-wall' technology

**STEPHEN WEIR**  
 SPECIAL TO THE STAR

Is the curtain set to come down on the traditional, aluminum-framed condo window? Is a new industrial style about to eliminate condominium owners' two biggest pains in the glass — moisture and mould?

Toronto is about to find out as several highrise project designers have decided that ultra-expensive curtain wall glass is the chic way to let light in and keep water out.

Windows come in many tints, shapes and sizes but almost all are installed using what builders call a window wall system: Glass goes into an aluminum frame which, in turn, is attached to the inside of a building's outer walls. Although relatively cheap to build, mount and repair, a poorly installed window wall can allow damaging moisture into a condo unit.

For residential projects where money is not a significant concern, floor-to-ceiling suite windows appear ready to make concrete outer walls obsolete.

Four soon-to-be-built projects — the Residences at the Ritz-Carlton, the Yann Weymouth-designed 77 Charles St. West project, The Florian and The Four Seasons Residences



The Ritz-Carlton will have "haze-free, crystal-clear glass."

in Yorkville— will hang their windows onto the frames of their buildings using an industrial glass system known as the curtain wall.

"Up to this point, almost every condo in the city has used some form of the tried-and-true window



77 Charles St. West condo will feature a 13-storey all-glass tower.

wall," says Darius Rybak, the project manager for 77 Charles St. West. "But when you look at the office towers in Toronto's downtown core, you see that glass is everything. Those 10- and 12-foot-tall windows look strikingly different



Four Seasons Residences will be trading walls for windows.

than what you get in a condo residence. That is because the office towers don't put their windows inside a wall, they use glass to become the wall . . . hence the term curtain-wall system. We are taking that industrial concept and using it in our

next downtown project."

The 77 Charles St. condos, designed by architect Weymouth who made a name for himself designing the Paris Louvre's glass pyramid, are an artsy venture in waiting. Once the existing four-storey Lycée Français private school has been shut down and the site cleared, Rybak will oversee the construction of the 16-storey multi-use structure for Aspen Ridge Homes.

At street level, the new building will blend in with the University of Toronto neighbourhood. The first three floors are limestone, with understated doors and traditional windows. This will be home to Kintore College, a small religious residence and educational centre.

On top of this heavy-looking structure will be a stacked, seemingly transparent 13-storey all-glass tower. The condos inside will range from 1,200-square-foot lower-level suites, to 6,000-square-foot penthouse units. No price has been announced for the top floor, but the rest range from a reported \$1.2 million to \$6 million.

This will be a radically different-looking glass-wrapped condo in a

WINDOWS continued on C04

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# Luxury condo to be set under glass

The Florian developer was first to adapt curtain-wall technology to new residences

STEPHEN WEIR  
SPECIAL TO THE STAR

The Diamante Development Group was the first builder in the world to adapt the science of curtain-wall glass specifically to the building of two new residential developments — the “Domus” condominium and townhouse project in Yorkville and One City Hall condos near Bay and Dundas Sts. Now Diamante is taking orders on a lavish curtain-walled tower that will add more than a touch of glass to Yorkville.

The Florian is to be a 22-storey luxury condo tower (suites start at \$1 million) that will benefit from Diamante’s experience with walls of glass.

“We are using a curtain wall to dramatically accent both the north and south corners of the building (at the corner of Davenport Ave. and McAlpine St.),” says Paolo Palamara, Diamante co-president.

“In most buildings there is a line of metal where the outer walls meet. In the Florian we won’t be using metal — the curtain wall allows us to use industrial-strength silicon to join the outside glass walls, so there isn’t that strip to break (the sight lines).”

Palamara, a classically educated Italian architect, now heads up a modern company that believes strongly in the advantages of using industrial curtain walls in residential projects. However, in using the all-glass wall Diamante has had to develop new building techniques to overcome some of the problems that this style of building can cause.

From the street a curtain wall looks like a solid wall of glass, however, if one looks closely where the floor and ceiling are, there are opaque sections — spandrel glass —

that hide where the mullions connect the glass panels.

This zone between floors is subject to intense heat in the summer and cold in the winter. However, Diamante has done a lot of engineering work on it and has devised a venting system and insulating technique to bleed off excess heat and insulate against the cold.

The glass itself is thick to keep out the elements — the outer pane is six millimetres thick, the inner sheet five mm thick. These are double-glazed Argon-filled windows that have a low-E coating. The glass has a grey tint, which the builder says people won’t notice when looking out their windows. The slight colourization helps reduce heat gain.

In addition to transferring heat and cold, the mullions can also transmit sound. A 22-storey curtain-wall system can transmit the sound of a human voice from top-to-bottom as clear as . . . glass.

In reality, however, that’s not something a condo buyer would want to live with. So Diamante has devised a way to ensure tranquility.

“We have developed an installation technique that prevents (sound transference) from happening in our buildings,” says Palamara. “We basically have developed a way to interrupt sound waves. We use sealant material and insulation in the mullions which interrupts and absorbs the frequency waves.”

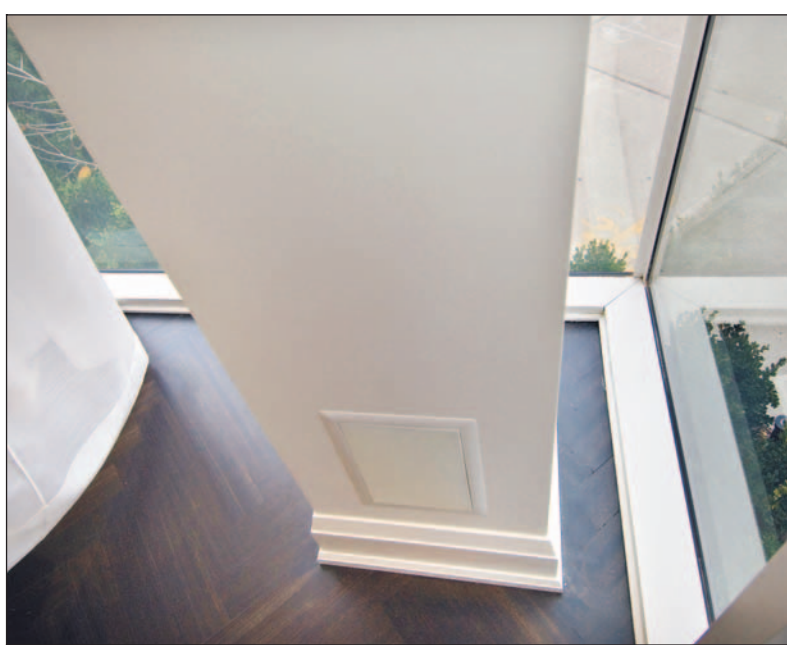
“From a technical perspective,” says Palamara, “a curtain has an inherent trait of noise transference along the glazing system. You can be on the fifth-floor, put your ear to the glass and hear what is being said on the 15th. It amplifies the sound. The sound travels through mullion channels on the interior of the curtain-wall system where the panes of glass come together.”

Diamante has installed a section of curtain-wall glass in its Yorkville model suite to study how the elements affect it prior to the May 2008 start of construction on the Florian.



TANNIS TOOHEY PHOTOS/TORONTO STAR

The Diamante Development Group has installed a section of curtain-wall glass in the Florian model suite.



Because the structure’s weight is supported within the building, more glass can be used for the outer wall, with even the corners joined by glass.



Curtain wall provides clean lines and lets glass go right to the floor.



An example of window wall, which has to be used on the balconies.

## Double-paned curtain wall is industrial strength

WINDOWS from CO1

part of Toronto where windows are making an exotic statement. Just a half a block away is Daniel Libeskind’s controversial Crystal at the Royal Ontario Museum.

“Our curtain wall will use large sections of glass which will give total vision to each floor,” Rybak says. “The individual units of glass will be five-feet-wide by four-feet-high. The suites we have are 10 feet from floor to ceiling, while the penthouse will have 12-foot ceilings.”

Because the glass is not supporting any weight (aside from its own dead load) the height and width of the glass is considerably larger than traditional windows.

“This type of system is probably about three times more expensive than a window wall. The thing is we aren’t making more money on this — we are providing a high-end product — we call it our jewel.”

Ignoring the cost of the curtain

**“A curtain wall eliminates the worry of warranty claims that other buildings face because of mould and moisture damage”**

RICHARD TUCKER  
OF GRAYWOOD  
DEVELOPMENTS

wall, the system will save money for homeowners over time. It is designed to block air and water from being pushed inside by heavy winds. It also puts a stop to outward air leakage, saving on heating and cooling costs.

“Water, be it windblown rain or snow, can get into a suite through

the window. It could take years, but when there is moisture behind dry-wall the danger of mould is real,” says Richard Tucker, director of construction for Graywood Developments Ltd, the company building the 53-storey Residence of the Ritz-Carlton. “From a practical sense, a curtain wall eliminates the worry of warranty claims that other buildings face because of mould and moisture damage.”

Window-washing firms are probably already in an advanced frenzied stage of salvation as they impatiently wait for the new Ritz-Carlton hotel and condominium tower on Wellington St. (kitty-corner from Roy Thomson Hall) to be completed. The structure will use a curtain wall system that might, at first glance, make one think of a giant terrarium turned on its side.

“The benefit of the curtain wall is that the residents and hotel guests get a superior product,” Tucker says. “We won’t start hanging the

windows until well on in the building process, but once we start the glass will go on rather quickly — I think we can do a floor a day.”

The Ritz is working with Sota Glass in Brampton. The company, owned by Juan Speck, designs and exports the Canadian-designed curtain walls to large-scale projects worldwide. Most of the customers are builders of large office towers, but already in other cities developers are finding that the market for high-end condos will bear the added cost of the curtain wall.

“There isn’t (an) off-the-rack curtain wall. They have to be custom-built to take into account (the shape and slope of the building)” Tucker says. “We will, of course, order extras in case of breakage.”

Earlier reports said the Ritz-Carlton would use a tinted glass. That apparently is not the case; the hotel and condo is going au natural.

“Tinted windows are so very much a look of the ’90s,” Tucker

says. “Even a slight colour clouds the view. The Ritz-Carlton will be installing haze-free, crystal-clear glass.”

Living hundreds of feet above the city with only two sheets of glass between you and the pavement, does one have to worry about accidentally banging into a window and falling out?

“This is tough glass, similar to what is already in place at the new Four Seasons (Centre for the Performing Arts) opera house. It might be transparent, but it is double-paned and industrial strength. (It is built to withstand gale-force winds,)” Tucker says.

Of greater concern for many, likely, will be getting used to living in a glass home. Standing in front of a window that doesn’t even appear to be there, 40 storeys above a city that never sleeps, may make condo owners feel on display. But that is why designers invented curtains in the first place.

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