William Farrell Building
before renovation

The William Farrell building is an eight story brick faced concrete structure. Originally made to house the companies telephone switching gear. With the introduction of digital operating equipment much of the space in the building became redundant for its intended use. Instead of demolishing the building, Busby & Associates Architects proposed retrofitting the structure. For energy conservation purposes the proposal was to cover the building with an double glazed aluminum framed curtain wall. The new high-tech curtain wall is hung 900 mm of the existing structure. The wall improves the heating and cooling performance of the building and is an icon of the new technology of the telus's digital information handling systems. Functional and aesthetic

Telus headquarter
renovated

Climate	Temperate
Facade construction	Twin-face - natural ventilation through operable windows in both faces. Full building height cavity. Air cavity -buffer zone.
Daylighting	Yes-Tall windows and light shelves.
Shading	Yes-Sun shades / light shelves. Glazing of different densities.
Adaptability to various orientations	No
User control	Yes-operable windows, interior and exterior . individual air diffusers w/control
Ventilation	Natural- operable windows. High ceilings HVAC -Forced air plenum in floor
Aesthetics	Curtain wall frame applied to existing brick faced building, renovation, High-tech

1/A Photos- existing and renovation exterior views

Project: Telus Headquarters
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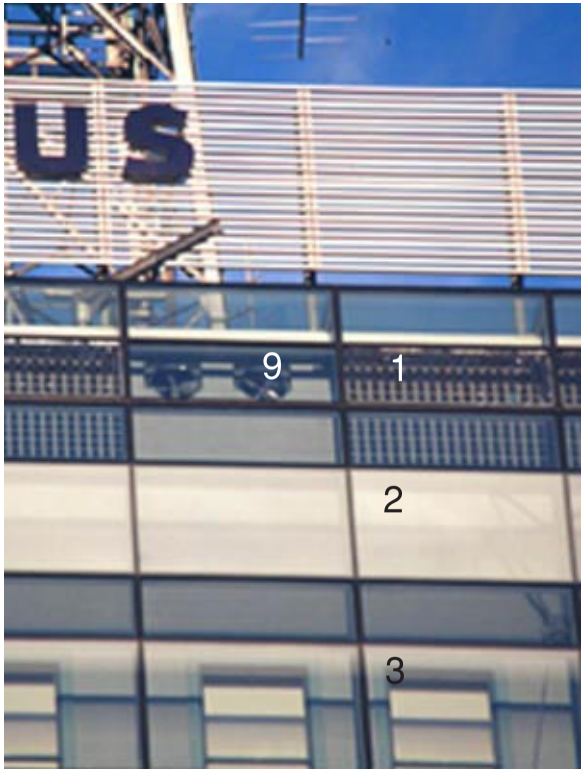
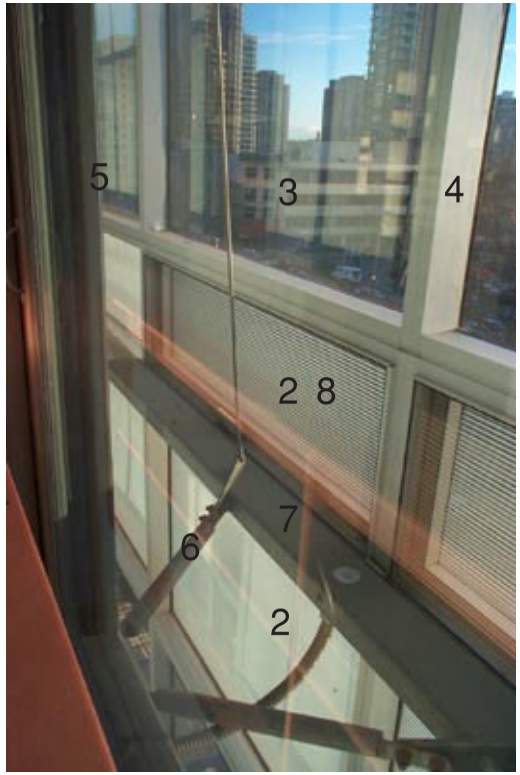
Location:Vancouver, B.C.

Const. Consult:Read Jones Christoffersen
Net Floor Area:11 430 sq. M.
Completion:Sept 2001

Exterior curtain wall at corner



Exterior curtain wall -Showing extraction fans at top of air cavity



Interstitial space between new curtain wall and existing building

The new exterior curtain wall acts to reduce ventilation and heating requirements. The cavity between the existing building and the new double skin essentially is a greenhouse. The interstitial space stores heat in the winter and provides shade and diverts heat from the existing building in the summer.
The cavity air is controlled by louvres at the base of the cavity and dampers at the top, to flush the air as required. Photovoltaic cells are linked to the ventilation fans and dampers on the roof.
The existing windows were restored to operating condition. To supply fresh air mechanized operable windows were fitted on the new glazing wall.
The existing brick veneer was removed. The exposed concrete acts as a heat sink. The curtain wall is hung off of the existing building with steel brackets and supports. The new glazing wall extends beyond the property line of the site.

1-Photovoltaic panels
2-Ceramic frit glass panels
3- Clear glazing
4- Aluminum Curtain wall
5- Exposed concrete exterior wall
6- Curtain wall hangers
7- Steel reinforcing beam
8- Mechanized exterior windows
9-Extraction fans

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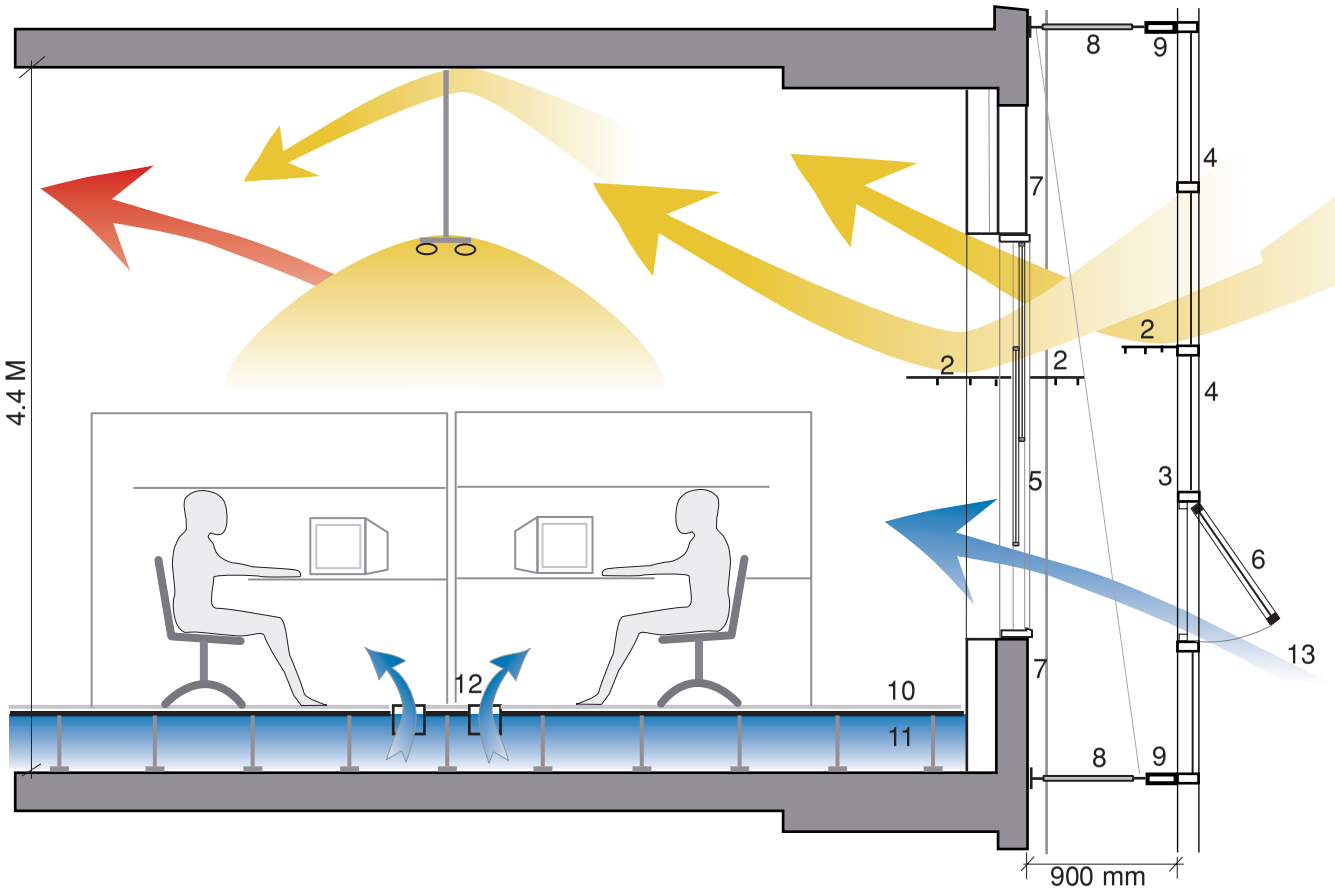

1 Interstitial space- seasonal climate buffer zone
2 Daylight reflector and sunshade
3 Aluminum framed glazing curtain wall
4 Solar shade glass panel- ceramic frit glass panel reduces solar heat gain
5 Operable windows-existing restored
6 Operable windows- new mechanized
7 Existing exterior wall- exposed concrete
8 Curtain wall hangers
9 Steel reinforcing for curtain wall frame
10 Raised office floor
11 Air plenum in raised floor
12 Air diffusers
13 Natural ventilation possible in moderate temperatures

The envelope helps modulate internal temperatures. Motorized windows on the new curtain wall, as well as operable existing units enable the occupant to obtain natural ventilation when possible. The window glass on the curtain wall is fitted at different densities for temperature modulation. Photovoltaic panels are fitted in the new curtain wall and are linked to ventilation fans and dampers on the roof that ventilate the interstitial space. Each workstation is equipped with individually controlled air diffusers to allow the flow of fresh air through a forced air plenum under the raised floor. The daylight reflectors allow light to penetrate deep into the building.

3/A Diagram - Air & light flow
Section

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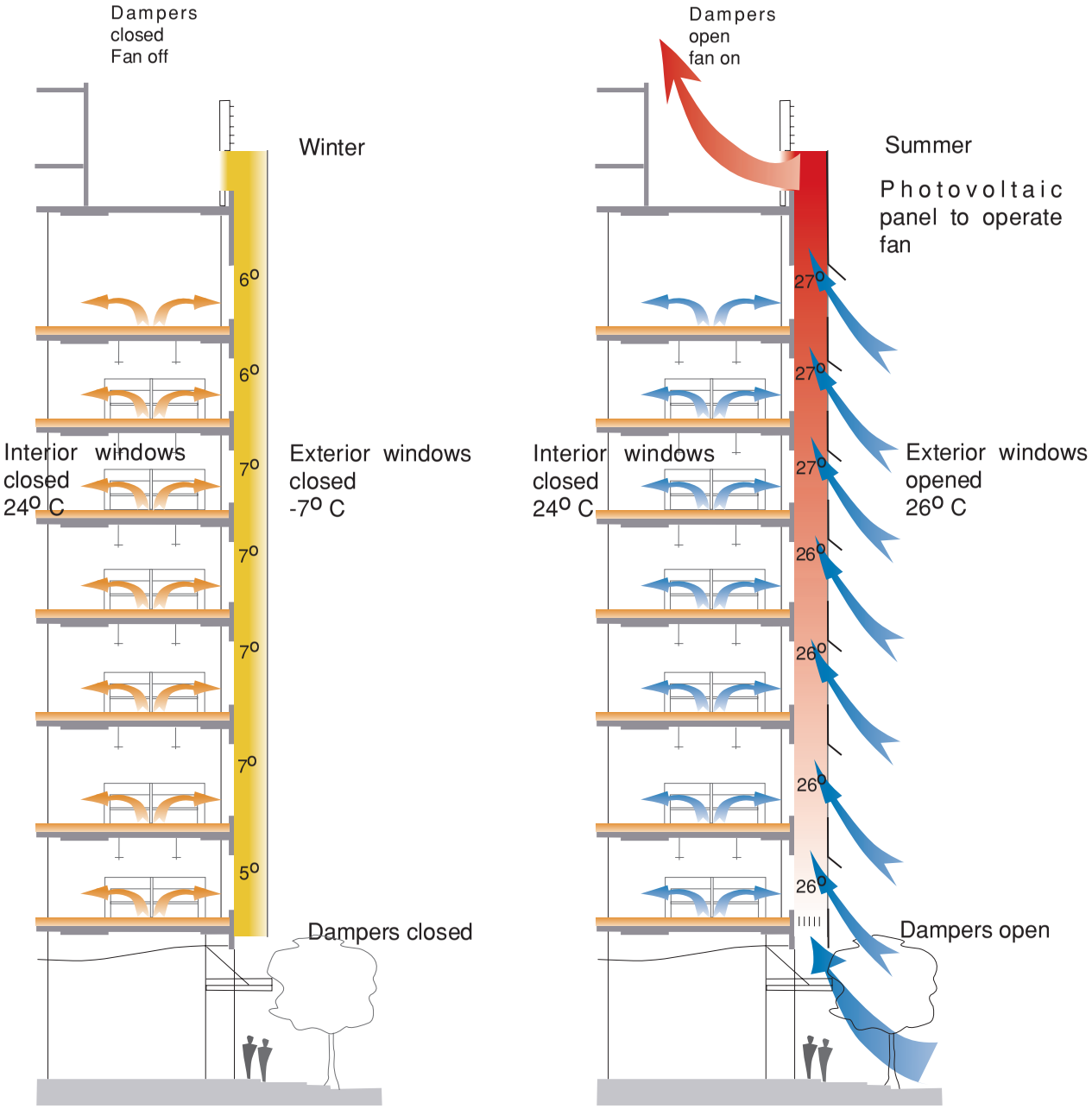

"The double skin acts as a ventilation chimney in warm weather and as an insulation jacket in cool periods. In winter months louvres at the top of the double skin remain closed, trapping a layer of air, allowing the building mass to retain available solar energy, which is then reradiated into the building, The exposed concrete structure acts as a heat sink, helping to reduce temperature fluctuations. In warm weather, with the louvres open, heat build within the double facade causes convection air movement. Assisted by fans, warm air is drawn up and out the top of the air space, creating negative pressure within the interior, which in turn draws warm air away from the occupied areas."[1] (McMinn 2001)

[1]Mcminn, John, *Sustained Discussion*, Canadian Architect, vol. 46, No.1 January 2001

4/A Diagram - Heat and ventilation
Section- Building

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