# St. Gabriel's Church, Toronto CANADA

PROJECT INTRODUCTION

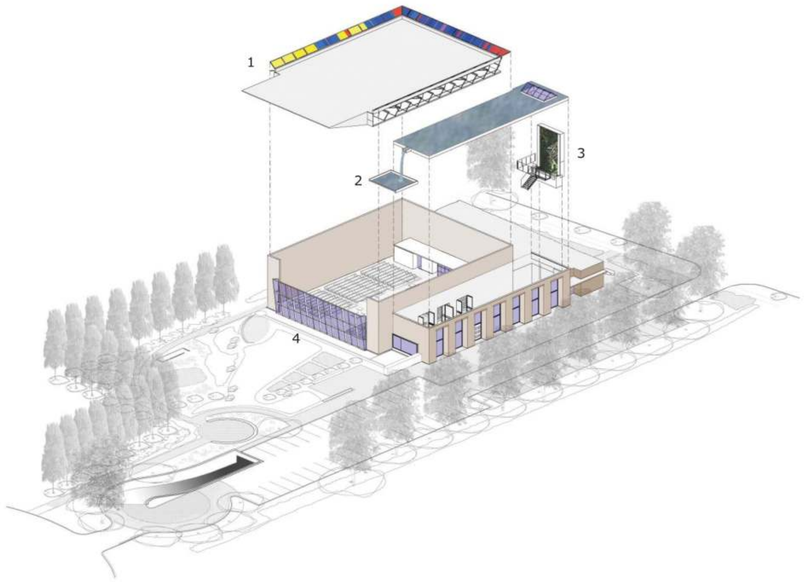
Celebrated as Canada's greenest worship space, the recently completed church for St. Gabriel's Passionist Parish was awarded LEED® Gold in 2006.

More than just an extraordinary, colourful and light-filled space, the design for St. Gabriel's reflects the unique eco-theology of the Catholic Passionist Community in Toronto. For them, the most important challenge of our time is to establish a mutually-enhancing, human-earth relationship. Like medieval cathedrals of the past, the goal of their new church is to help communicate this message to the public.

In response to the client's ecological mandate, leading edge sustainable strategies were integrated into the design. The entire south façade of the worship space at St. Gabriel's is glazed to passively harness the winter sun's energy and extend the worship area visually into an extensively planted garden beyond. A large iconic canopy provides shade in summer. The remaining three walls of exposed architectural concrete serve as a constantly changing canvas for the dynamic play of coloured light that is filtered through the coloured glass panels of the continuous perimeter skylight and affected by seasonal influences on the sun's intensity and inclination, together with daily weather conditions.

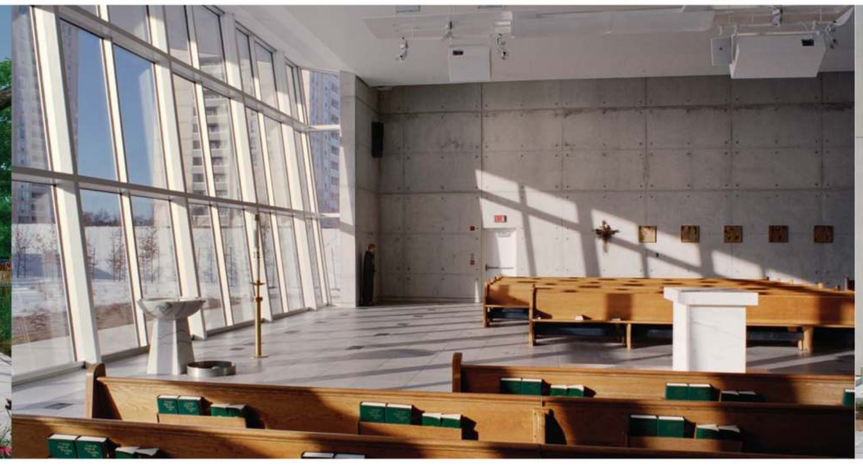
The unprecedented investment in underground parking reduces the building's impact on the urban heat island effect and contributes to wildlife habitat. The extensive green roof garden, located over the underground parking, with its drought-tolerant plants and drip-irrigation system, reduces potable water use by 78%. Waterless urinals, dual flush toilets, and solar-powered low-flow faucets provide an additional 47% water reduction.

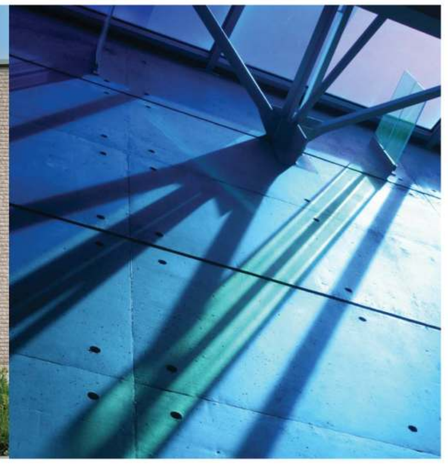
To reduce their impact on global warming and resource use, the client has purchased an ultra low-emissions hybrid vehicle. To encourage cycling, the facility includes bike racks and showering facilities. Preferential parking is provided for those who carpool or drive hybrid vehicles. St. Gabriel's is also located within easy walking distance of two subway stations encouraging parishioners to leave their cars at home and arrive via public transit.




Axonometric drawing of St. Gabriel's Church, showing major design elements:
1_Perimiter skylights allowing coloured light to flood the Nave
2_Water feature - water runoff supports the planted wetland
3_Living Wall
4_South-facing glazed wall overlooking garden

PHOTOS L-R: View looking north over the garden and meditation circle; View towards the west wall of the nave indicating harvesting of winter sunshine from the glazed south wall; The water feature allows water runoff from the roof to support the planted wetland; Blue light floods the east nave wall with special effects from dichroic filters.





*Architect: Larkin Architect Limited*
*Client: Passionist Community of Canada*

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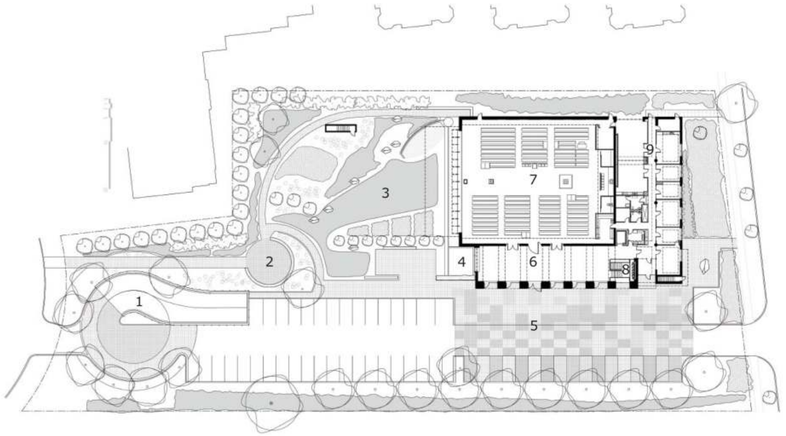
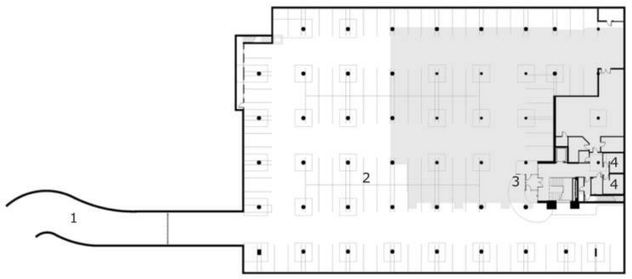



**Ground Floor/Site Plan**

1. Parking Ramp
2. Meditation Circle
3. Garden
4. Water Feature
5. Plaza
6. Narthex
7. Nave
8. Living wall
9. Administration




**Basement Floor Plan**

1. Ramp
2. Parking
3. Lower Level Entry
4. Washrooms
5. Living Wall

## SUSTAINABLE INITIATIVES

St. Gabriel's achieves a 50% reduction in energy use and purchases their electrical power from a renewable energy supplier. The building incorporates many energy-conserving features:

- a well insulated building shell
- energy efficient window systems
- a highly efficient mechanical system including heat recovery
- supplemental passive solar heating
- extensive use of natural ventilation and daylighting
- room occupancy and daylight sensors that control lighting levels

## INTERIOR ENVIRONMENTAL QUALITY

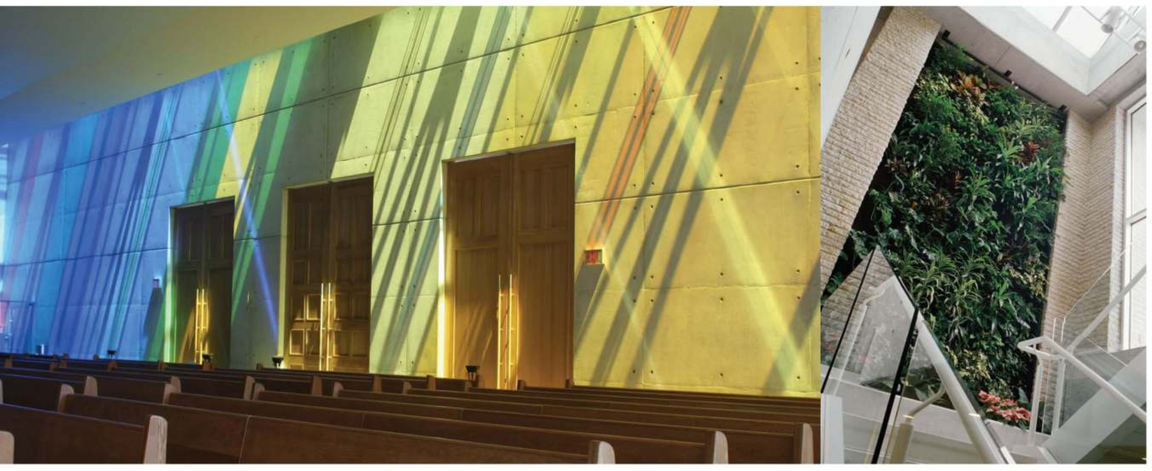
Almost all interior spaces (94%) enjoy a view to the outdoors and abundant natural lighting (89%). This design results in a healthy and beautiful indoor environment and reduces energy use by reducing the need for artificial lighting. A "living wall" of tropical plants acts to purify and condition indoor air, in addition to providing a spectacular indoor natural feature.

## MATERIAL REUSE

Over 10% of construction materials were salvaged from the original church and re-used: pews, stained glass windows, mosaics, and marble. A total of 15% of construction materials have high recycled content, most notably structural steel, rebar, concrete and drywall. Another notable achievement is that 30% of construction materials are locally produced. A construction waste management program diverted over 50% of construction materials from landfill. St. Gabriel's has an active recycling program and environmentally friendly maintenance regimen.

## INNOVATION IN DESIGN

As part of their ongoing commitment to educating others, the church has installed an interactive computer kiosk to explain the building's sustainable design features. This kiosk is augmented by an extensive signage program both inside and outside of the building. Brochures, online essays, frequent tours, and public presentations round out the project's commitment to a greener Toronto.



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## PROPOSED ENERGY USE BY ENERGY SOURCE FOR ST. GABRIEL'S

| | Electricity (MJ) | Gas (MJ) | Total (MJ) | Total (MJ/m²) | Energy Cost | Cost/m² |
|---|---|---|---|---|---|---|
| Proposed | 880,189 | 772,513 | 1,652,702 | 887 | $39,587 | $21.24 |
| Reference | 962,726 | 2,404,735 | 3,367,461 | 1,807 | $61,470 | $32.98 |
| Savings | 82,537 | 1,632,222 | 1,714,759 | 902 | $21,883 | $11.74 |

PHOTOS L-R: East wall of the nave bathed in coloured light from the skylights above; View of the two-storey Living Wall - a planted wall which filters airborne toxins and provides a transition from the underground parking area to the Narthex.