

This table highlights a sampling of the passive strategies that were incorporated at the Olympic Village. It illustrates the energy efficiency and livability benefits of each particular strategy. All images are from Parcel 10.

Passive design is a current term for an age-old concept: designing buildings that respond to their natural environments.

PASSIVE FEATURES AT MILLENNIUM WATER

Blinds + Shades	Deep Balconies	Insulation + Envelope	Exterior Corridors	Cross-Ventilation + Cooling Ponds	Stairwells, Circulation + Light Access
					
<p>Description of Strategy</p>					
<p>Operable blinds are installed on the exterior of several buildings, on south- and west-facing façades. Fixed and moveable shades are also present on buildings throughout the Village.</p>	<p>Balconies were extended in order to improve their effectiveness as shading features.</p>	<p>Additional insulation was applied to the façades of buildings, adding a total of two inches of thickness to all exterior walls.</p>	<p>Corridors and access-ways are located on the exterior of many of the buildings.</p>	<p>Units, where possible, are designed to allow opportunities for cross-ventilation. Ponds are present in many of the courtyards, cooling the air that circulates in and out of the buildings.</p>	<p>Stairwells are widened and exposed to natural daylight (where possible). This was accomplished in some of the buildings by pulling the stairwell to the exterior of the building, making it a design feature and part of the building's façade.</p>
<p>Energy-Efficiency Benefits</p>					
<p>Blinds and shades block the sun's rays from entering through the window, thereby blocking excessive heat gains.</p>	<p>During the warm summer months while the sun is at a high angle, deeper balconies provide shade for a larger area in the unit beneath.</p>	<p>Efficient insulation is integral to meeting the energy-efficiency goals of the buildings. Proper wall assemblies and insulation help to ensure there is no unwanted heat losses through a building's envelope.</p>	<p>Exterior corridors reduce the energy loads associated with daylighting and space conditioning in indoor corridors.</p>	<p>Cross-ventilation and natural ventilation strategies minimize the need for mechanical ventilation.</p>	<p>Wider, daylit stairwells and corridors reduce the need for electric lighting and encourage occupants to use the stairs, thereby reducing the frequency of elevator use.</p>
<p>Livability Benefits</p>					
<p>The indoor environmental atmosphere is under the control of the user. Shading devices and operable blinds allow occupants to determine the amount of sunlight and heat energy that enters into their suite. They can control heat gains to their desired thermal comfort level.</p>	<p>Besides the cooling benefits of shading, larger balconies offer the added benefit of increased outdoor area per suite.</p>	<p>Steady temperature and humidity levels in a building's interior helps to maximize thermal comfort.</p>	<p>Exterior corridors are open to the central courtyards of the apartment blocks, encouraging social interaction and creating a sense of place and a shared space with one's neighbours.</p>	<p>Enabling cross-ventilation is key in improving natural ventilation in buildings, and keeping a continuous flow of fresh air. Indoor environmental quality and associated health benefits are improved.</p>	<p>Stairwells were designed to be bright, comfortable, airy and safe – making the prospect of regular use more desirable than in a conventional enclosed stairwell. This has the effect of encouraging physical activity.</p>

CHALLENGE To municipal planners and administrations, to consider and accommodate passive design parameters during the initial layout of neighborhoods and streets in order that new developments can appropriately align buildings to maximize energy efficiency and improve occupant comfort.

FEATURE PROFILE

ITC Construction Group

ITC Construction Group is one of Western Canada's leading general contractors and has been recognized as one of Canada's 50 Best Managed Companies every year since 2003.

ITC played a key role in building the Olympic Village, responsible for the construction of 530,000 square feet of residential and commercial space. The scope of the project, combined with coordination of a huge consultant team and the grueling schedule were all challenges that ITC faced on a daily basis as it fast-tracked through the project. "There are reasons why nobody normally does all of these types of works at once," says Brent Olund, ITC's Project Director. "The coordination implications have been profound."

Among the coordination challenges was the safe operation of 12 tower cranes with many overlapping each other on the construction site at one time. "Imagine a tower crane operator having to talk to individuals on six different radios at once and safely focus on the task at hand," says Olund. To prevent accidents, ITC trained its own crane operators and those from MetroCan to use TAC-3000, a tower crane anti-collision system never before used in Canada.

Thanks to the safety efforts of a conscientious construction team, the project achieved below industry average workforce injury rates.