

RBC Centre

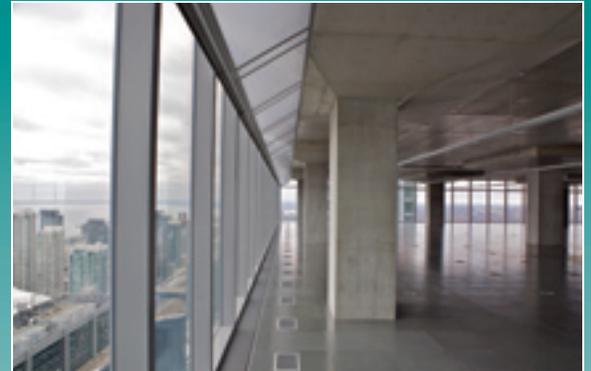
The RBC Centre reflects the reinvention of one of Canada's largest and oldest banking institutions to create high-performance headquarters facilities for both RBC Dexia and the RBC Financial Group, long recognized as a leader in sustainable business practices. Located between Toronto's Central Business District and the Lake Ontario waterfront, the Class 'AAA' office tower occupies a prominent site at the southwest corner of Wellington and Simcoe Streets.

Rising 42-storeys from a 10-storey podium, the building features flexible open-plan floorplates of 24,000 square feet. The glazed form of the tower responds directly to its north-south orientation and corner location with a shield-like glass volume on the east-facing Simcoe Street façade. The volume sets back and angles in to mark the building's main entrance, giving the tower a distinctive profile on the Toronto skyline.

Originally designed to achieve LEED Silver, as construction progressed a revised target of LEED Gold NC was seen as feasible. Building to LEED Gold standards provided the PCL team with ample opportunity for innovation. These innovations did not necessarily come from refining existing methods of construction, but rather through addressing the construction of LEED

design requirements. New ideas came in many forms, from a simple tool, to devising a methodology to achieve the high-performance standards for an exposed concrete ceiling.

The tower was designed as a highly effective working environment that is healthy, comfortable, and energy efficient, as has been dubbed Toronto's most environmentally friendly office tower. Numerous features have been incorporated into the construction to earn this title. The tower's raised floors (with in-floor heating and cooling systems) and flexible HVAC controls offer indi-



- Owner:** The Cadillac Fairview Corporation Limited
- Architect of Record:** B+H Architects
- Engineer of Record:** Halcrow Yolles
- General Contractor:** PCL Constructors Canada Inc.
- Material Supplier:** St Marys CBM
- Additional Participants:**
- Alliance-Avenue Joint Venture
 - Aluma Systems Inc.
 - Carpenters Local 27
 - Enermodal Engineering
 - Gilbert Steel Limited
 - Ironworkers Local 721
 - Kohn Pedersen Fox Associates
 - Peri Formwork Systems Inc.
- Project Facts:**
- Estimated cost of \$420 million
 - Completed September 2009
 - 42-story office tower
 - 1.2 million square feet of leasable office space
 - 600 feet tall
 - 26 Passenger elevators



vidual control of ventilation to building occupants. Operable windows are provided up to the building's 10th floor to further augment ventilation. The building is cooled using Enwave, Toronto's deep-lake water-cooling system that reduces the need for costly, conventional air conditioning chillers. Floor-to-ceiling windows enhance daylighting, while sun-shading devices and automated blinds tied to exterior light sensors and room-occupancy sensors that turn off lights when spaces are not in use, maximize energy efficiency and minimize operating expenses. Indirect lighting reflected off the exposed concrete ceilings augments daylight as required.

Perhaps most importantly, the project made considerable strides in the use of recycled and environmentally friendly construction materials. In accordance with 'MRc4-Concrete' guidelines, the total percentage of Post-Industrial Recycled Material Content was 40.55% on the total Quantity of Concrete (equal to 66,000 m³). Other materials with a high-recycle content (e.g., steel and gypsum board) were used where possible, and locally sourced to reduced the impact of transportation. Wood products came from sources that practice sustainable forestry, and over 95% of construction waste was diverted from landfill. Low flow plumbing fixtures are used throughout, and water use is 48% that of a comparable, conventional building. Even rainwater is collected for use in irrigation and toilets on the first six floors of the building.

While LEED certification has historically imposed a significant premium to the cost construction, this need not be the case anymore. LEED certified buildings can be constructed with little or no cost above conventional building types, and Silver/Gold ratings can be achieved for relatively low additional costs. When savings on long-term building maintenance and energy utilization are factored in, highly sustainable and environmentally friendly buildings such as the RBC Centre become an even more attractive construction solution.



2010 Ontario Concrete Award winning project for
Sustainable Concrete Construction

In 2000, the Ontario Cast-In-Place Concrete Development Council (OCCDC) was formed to aid the owner/developer, architect/engineer and design-build contractor in the decision-making process of choosing the best construction material for the framing system of new cast-in-place structures.

OCCDC promotes the benefits of reinforced concrete as the construction material of choice based upon the following advantages:

- fast-track construction
- costs savings
- structural advantages
- environmental considerations
- local economy benefits

The Members of the OCCDC include (alphabetical order):

Aluma Systems Inc.
Carpenters District Council of Ontario
Concrete Forming Association of Ontario
Ironworkers District Council of Ontario
LIUNA—Ontario Provincial District Council
Ontario Formwork Association
PERI Formwork Systems Inc.
Ready Mixed Concrete Association of Ontario
Reinforcing Steel Institute of Ontario



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