

# STRUCTURAL DESIGN INNOVATION

AEROCENTRE  
V

LEED  
*Silver Application*



## PROJECT CREDITS

### OWNER

Healthcare of Ontario Pension Plan (HOOPP)

### ARCHITECT OF RECORD

Sweeny Sterling Finlayson & Co. Architects Inc.

### ENGINEER OF RECORD

Stephenson Engineering Ltd.

### GENERAL CONTRACTOR

Vanbots, a division of Carillion Construction Inc.

### FORMING CONTRACTOR

Structform International Limited

### MATERIAL SUPPLIERS

James Dick Construction Limited  
Armtec Pre-Con Inc.

### ADDITIONAL PARTICIPANTS

- Aluma Systems Inc
- BPI Consultants Corp.
- Carpenters Local 27
- Emermodal Engineering
- Harris Rebar
- Ironworkers Local 721
- Manuel Jordao and Associates Limited
- Multiseal Inc.
- Structural Contracting Ltd.
- The Mitchell Partnership Inc.

## PROJECT FACTS

**LOCATION** Mississauga, Ontario

**COMPLETION** July 2010

**BUDGET** \$54 Million

### SIZE

- Office tower offers 225,000 sq ft of rentable area
- Above-ground parking garage hosts 1,000 cars

**HEIGHT** 8 storeys

### FACILITY

Dual-core, 5-floor office tower atop a three-level, open-air, above-grade parking structure

### STRUCTURE

- Office component was constructed of cast-in-place reinforced concrete
- Above-ground parking garage consisted of precast concrete

### FINISHES

- Office tower boasts of exposed concrete columns; concrete floors with access flooring; exposed concrete ceilings with reflective surface in office; exterior glass curtainwall
- Above-ground parking consists of reinforced cast-in-place concrete with precast used on the exterior of the parking wings





## *Concrete contributed to the LEED Silver application*

The AeroCentre Phase V is a 225,000 sq ft Class 'A' office building located within the Airport Corporate Centre in Mississauga, a multi-office campus home to major corporations and thousands of workers. The tower boasts 225,000 square feet of commercial office space on 5-storeys, situated above a 3-levels, above-ground, open-air parking facility.

The office tower was constructed of reinforced concrete with curtainwall exterior incorporating ventilated windows and automated window shading together with access flooring throughout. The access flooring houses all the mechanical/electrical distribution and provides superior ventilation as well as flexibility to accommodate the specific needs of tenants.

Concrete played a key roll in completing this project. The primary drivers behind using concrete were as follows:

- Contribute to the LEED Silver application by using concrete as the final finish in the office tower. Exposed concrete ceilings and columns decreased VOC's associated with traditional finishing materials such as drywall, paint, and ceiling tiles.
- Provide tenants with indirect lighting through the use of up-lighting. This required a high-quality finish on the exposed concrete ceiling to create a reflective surface.
- Fast-track the project by using precast concrete as a schedule enhancement

The central portion of the office tower and parking garage utilized cast-in-place concrete. The cast-in-place structure was designed with ledges and corbels on which the precast structure could rest, with expansion joints ensuring freedom of movement between the office space and the unheated parking area. The parking "wings" flanking the main office tower used a combination of cast-in place structure and precast panels. Precast concrete allowed site erection to be done in a few weeks which in turn helped minimize inconvenience to the other buildings' tenants. The precast innovation also allowed the precast to be installed using

smaller mobile cranes, easing the burden of the height restriction placed on the site by the Greater Toronto Airport Authority.

Because both cast-in-place and precast concrete was utilized, attention was required to ensure that the two finished products matched as closely as possible in terms of colour and texture. The precast contractor, Armtec Pre-Con, worked collaboratively with other construction teams to ensure that, in addition to colour and texture, the strength requirements of the precast elements, CSA C1 Class of Concrete Exposure, and LEED product requirements were successfully met.

A high-quality finish was required of the concrete to achieve the building's design objectives. This required the formwork contractor, Structform, to devise construction methods that would produce blemish-free exposed ceilings capable of reflecting light from upward facing fixtures back onto the occupied space. Formwork was composed in a pre-determined pattern to achieve plywood joints with a symmetric pattern and tight, pleasing appearance, free of blemishes. Trades working on forms took extra care to avoid chalk marks, pencil marks, and oil stains that could telegraph to the slab.

Vanbots' expertise was used to procure and supply a concrete mix capable of reflecting light back onto the work space efficiently. Special self consolidating concrete mixes were also used for exposed architectural columns. This type of mix produced columns with a blemish-free appearance, with no air holes visible to the eye. Special form release agents and plastic laminated form faces ensured that the final finish be as bright as possible.

The end result is a pleasing building with exposed ceilings and columns using concrete as a noble material. The final appearance of the product is both pleasant to the eye and offers high levels of performance and a lower carbon footprint. No additional finishes are required—concrete is now a finish material.

