

The Currents

The Currents Condominium project and Great Canadian Theatre Company is an impressive initiative that links a new theatre facility with a high rise building. It is an environmentally sensitive construction project within minutes of downtown Ottawa.



During the design stage, Windmill Developments set a target to develop the “Greenest” mixed use building in Canada, aiming to achieve a Leadership in Energy and Environmental Design (LEED) Gold Standard. Windmill Developments selected Aecon Buildings (Ottawa) as the constructor for this challenging task.

Construction of the 10-storey condo/theatre began in January of 2006 and was completed in March of 2007. The building including the

ater consists of 6,531.5 square meters and cost approximately 13.5 million dollars to build. The project was unique not only in its green building features but also in the non-column spans that the theatre required, all the while supporting a condo building above it. While the final certification of the building is still in the completion stages, all the progress to date indicates that the LEED Gold status will be achieved. In fact, the building was extremely close to achieving platinum status.

Concrete played many roles and had many significant impacts throughout the planning and construction of the building. In calculating energy models and targeting reductions, concrete contributed in the way of thermal lag of the mass, and its contribution to internal space loads over the course of a day. Further to those positive impacts, the use of concrete contributed to achieving the Durable Building Materials and Resource (MR) credit 8. The owner/design team incorporated the use of corrosion inhibitor within the parking structure which would also increase the longevity of the already durable concrete material.

Once selected by Windmill and Aecon as team members, CBM (Canada Building Materials) began research and development and performed trials on concrete mixes required for the project. With LEED Gold status as the goal, it was imperative that recycled contents via LEED MR credits 4.1 and 4.2 were maximized. This would be especially difficult with much of the structure being erected in winter conditions.



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| Owner: | Windmill Development Group |
| Architect of Record: | Busby Perkins + Will |
| Engineer of Record: | Adjeleian Allen Rubeli Limited
Consulting Engineers |
| General Contractor: | Aecon Buildings (Ottawa) |
| Material Supplier: | St Marys CBM |
| Additional Participants: | <ul style="list-style-type: none">• Build Green Consulting• Carpenters Local 93• Harris Rebar• Ironworkers Local 765• LIUNA Local 527 |
| Project Facts: | <ul style="list-style-type: none">• Gross floor area of 4,717.5 m² (50,779 ft²)• Including theatre of 6,531.5 m² above grade (70,304.5 ft²)• Project value of \$13.5 million• Construction from October 2005 to January 2007 |



It was through careful mix selection, constant communication, and excellent construction practices that the team was able to achieve a post-industrial recycled content of 49.55%. All of the concrete raw materials to be recycled were well within the local limits of 800 km (truck). This in turn led to energy and emissions reductions from the refining and manufacturing of new materials. This high postindustrial percentage coupled with other great results from divisions 2 through 10 qualified the project for an Innovation in Design credit ID1. Significant contributions were also made to credits MR 5.1 and 5.2, through the use of regional bulk materials consisting of aggregates, cement, and slag, etc. In total, not including the design stage, ready mix concrete significantly contributed to 5 LEED credits.

One of the dual roles that supplementary cementing material played was controlling the heat of hydration on a 40-MPa structural suspended slab that supported the condo above the theatre. Elements of the slab were up to 1.5 meters thick.

In fostering energy efficient building practices, the ready mix industry truly benefited by demonstrating its green capabilities and alternate uses of its supplementary cementing material in meeting the construction industry's requirements. Overall this project will benefit the industry, community and the environment.



2007 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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