



March 31, 2011

iiSBE Canada SB11 SBC Call for Posters
c/o Energy Profiles Limited
295 The West Mall, Suite 503
Etobicoke, ON
M9C 4Z4

Attn: Mr. Bob Bach

Email: bbach@energyprofiles.com

Dear Bob,

**Re: SB11 SBC Call for Poster Presentations
Centre for Green Cities at the Evergreen Brick Works**

Please find attached our submission of the Centre for Green Cities at the Evergreen Brick Works for the iiSBE Canada SB11 Poster Presentation.

If you have any questions or concerns, please do not hesitate to contact us.

Yours very truly,
HALSALL ASSOCIATES LIMITED

A handwritten signature in black ink, appearing to be 'M.' with a stylized flourish.

Mark Bessoudo, M.A.Sc., LEED AP
Project Associate

A handwritten signature in black ink, appearing to be 'Jenny McMinn' with a stylized flourish.

Jenny McMinn, B.Arch., B.E.S., LEED AP
Project Manager

Centre for Green Cities at the Evergreen Brick Works

This project involves transforming an abandoned 19th-century quarry and brick factory into an environmental community centre in the heart of Toronto's ravine system. The building was built upon an existing heritage building, integrating existing brick walls, trusses, and columns. It is targeting LEED Canada-NC Platinum certification, with a focus on energy performance.

At the heart of this development is the Centre for Green Cities, a workspace for Evergreen and other social entrepreneurs, which will reflect their appreciation for environmental issues and embodies Evergreen's mission to "bring communities and nature together for the benefit of both."

Two of Evergreen's objectives were to create a great visitor experience and to be an agent for behavioural change – this will be accomplished through a combination of public art, storytelling, and data from a comprehensive measurement and verification system.

When completed, the 16-hectare Brick Works site, which was donated by the City of Toronto to Evergreen to help their urban sustainability education efforts, will include a complex of revitalized historical buildings and industrial structures, several large exhibition halls, ponds, a skating rink, nature trails, a farmers' market, and canals that will help manage the Don River waters when in flood.

The Brick Works has been recognized by National Geographic as one of the world's Top 10 geo-tourism destinations.



Evergreen at the Brick Works (Image credit: Diamond + Schmitt Architects)



Centre for Green Cities (Image credit: Diamond + Schmitt Architects)

PROJECT FACTS

Project: Centre for Green Cities at the Evergreen Brick Works

Location: Toronto, ON

Date of Construction: The construction of the Centre is largely complete, with partial occupancy as of December 2010

Building Owner: Evergreen

Address: 550 Bayview Ave.

Contact: Robert Plitt
Manager of Sustainability, Evergreen Brick Works
Centre for Green Cities, Suite 300
550 Bayview Avenue
Toronto, Ontario M4W 3X8
Tel: 416-596-1495 x 238

BUILDING STATISTICS

GFA: 4,984 m²

Building footprint: 968 m²

Gross wall area: 2,688 m²

Building type/use: 1 Event Floor, 4 Office Floors

ENVELOPE CONSTRUCTION

Window-to-wall ratio: 23%

Walls: R-35

Roof: R-50

Windows: Windows are double-glazed IGU with warm-edge spacers, low-e coating and krypton-filled and have thermally-broken aluminum frames. Fixed perforated metal shading on the south, west, and north facades and movable external shades control solar gains and act as one of many media for art.

South and West Glazing: U-value: 0.904 W/m² K, SHGC: 0.33, VLT: 0.604
(Total U-value including frames: 1.78 W/m² K)

East and North Glazing: U-value: 0.731 W/m² K, SHGC: 0.481, VLT: 0.628
(Total U-value including frames: 1.81 W/m² K)

HVAC DESCRIPTION

Ventilation energy conservation strategies include a high-performance heat recovery system with a desiccant wheel for latent energy and a glycol run-around loop, for sensible energy. Heating is decoupled from ventilation and is provided by an in-floor radiant system on the ground floor and radiators around the perimeter of interior spaces, rather than through the ventilation system. These measures are predicted to reduce ventilation heating loads by 42%.

Operable windows, coupled with three solar, wind, and fan driven “chimneys” were included to drive natural ventilation and night-time air purge cooling strategies. CO₂ sensors and enthalpy-controlled ventilation are predicted to further reduce fan loads by over 25%.

LIGHTING AND DAYLIGHTING DESCRIPTION

Careful spacing and selection of high-efficiency fixtures and daylight and occupancy controls reduce lighting energy by over 50% relative to ASHRAE 90.1, 1999. Lighting power density is 6.5 W/m².

PROJECTED ENERGY USE

Regulated only:

- Electricity: 797,517 MJ = **160 MJ/m²**
- Natural Gas: 1,227,030 MJ = **246.2 MJ/m²**

Regulated + Non-regulated:

- Electricity: 1,236,103 MJ = **248 MJ/m²**
- Natural Gas: 1,227,030 MJ = **246.2 MJ/m²**

PROJECTED ENERGY SAVINGS

Projected energy savings are relative to ASHRAE 90.1-1999.

Total energy consumption (regulated):

- Proposed = 2,024,547 MJ
- Reference = 4,032,951 MJ
- **Savings = 49.8%**

Total energy consumption (regulated + non-regulated)

- Proposed = 2,463,133 MJ
- Reference = 4,471,538 MJ
- **Savings = 44.9%**

RENEWABLE ENERGY SOURCES

Evergreen is currently exploring partnership opportunities to fund a 110 kW (peak) photovoltaic system at the Brick Works site. A 20 kW array is planned for the roof of the Centre for Green Cities, while the remaining 90 kW is planned for the roof of an adjacent industrial building. In the interim, Evergreen has committed to purchasing Renewable Energy Certificates (RECs) from Bullfrog Power for 100% of the building's annual electricity consumption.

PROJECTED POTABLE WATER USE

Fifteen 20,000-litre above-ground rainwater cisterns collect water from the roofs for irrigation, service washrooms, and the cooling tower. They are expected to capture more than 4 million litres of water annually. The building contains low- and no-water lavatory fixtures,

The projected potable water use for the 200 building occupants is:

- 861,380 L/year = **4,307 L/FTE/year** or **173 L/m²/year**

By collecting rainwater and specifying low-irrigation plant species for landscaping, there will be no potable water required for irrigation.