

# ECOroof

## CASE STUDY



### GREEN ROOF PROJECT SUMMARY

#### Type of green roof: Extensive

An extensive green roof has a shallow, light growing medium and the landscaping is designed to be relatively self-sustaining, requiring little maintenance and minimal structural support.

**Building Type:** Commercial

**Total Cost:** \$54,845

**Eco-Roof Incentive Program funding received (2009):** \$27,000

**Size of green roof:** 540 m<sup>2</sup>

**Cost per square metre:** \$101

#### Project timeline:

Design to installation: 2 months

Installation: 2 days

#### Annual gas savings:

31,131.5 Gigajoules

*Based on actual energy consumption, as indicated on pre- and post-installation energy records.*

#### Volume of stormwater diverted from municipal system per year (estimate):

264,585 L

#### GHG emission reductions per year due to diverted stormwater (estimate):

59 kg of CO<sub>2</sub> equivalent

**Gladstone Hotel**  
**1214 Queen St. West**  
**Toronto, ON M6J 1J6**

Phone: 416-531-4635

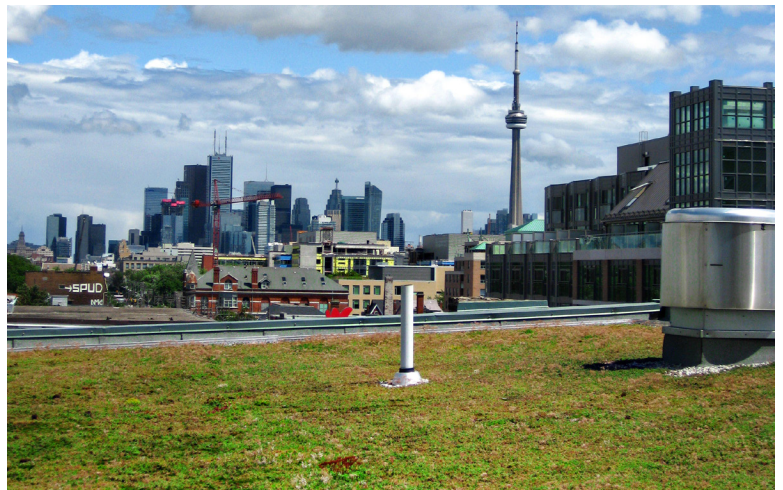
Website: [gladstonehotel.com](http://gladstonehotel.com)

Contact: Alec Badley, General Manager

Spring 2011

### The Gladstone Hotel

The Gladstone Hotel, the oldest continuously operating hotel in Toronto, was originally built in 1889 as a stylish hostelry across from the then existing Parkdale railroad. Designed in the Richardsonian Romanesque style, the Gladstone Hotel has a long history of providing respite for artists and performers who stayed there after performances at Massey Hall. It was also a favourite spot for vaudeville performers during the Canadian National Exhibition, and it was famous for its cuisine and service. The Zeidler family bought the hotel in 2000 and restored the hotel, now famous for its 37 rooms – each designed by a different local contemporary artist. In 2009, the Gladstone Hotel was voted one of National Geographic's "Traveller Stay Guide's" most-loved hotels.



"The eco-roof installed at the Gladstone Hotel reduces the building's heating and cooling costs and diverts a significant amount of water from the city sewer system."

Alec Badley, General Manager, The Gladstone Hotel



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### Quick Facts: Green Roofs

- reduce combined sewer overflow by delaying flow of runoff and filter stormwater;
- extend the lifespan of a roof by two to three times that of traditional roofing systems;

*Reference: Gaffin , S.R. et al (2010). A Temperature and Seasonal Energy Analysis of Green, White, and Black Roofs.*

- absorb airborne toxins and improve air quality;
- provide habitat for birds, butterflies and other wildlife;
- have the potential to save between 4 and 20 kWh of energy per square metre of green roof coverage per year, depending on the age of the building;

*Reference: Gaffin , S.R. et al (2010). A Temperature and Seasonal Energy Analysis of Green, White, and Black Roofs; and consultation with Environment Canada Adaptations & Impacts Researcher Dr. Brad Bass.*

- have the potential to cool surrounding air and reduce the ambient air temperature by .1 to 2°C on hot summer days, thereby decreasing the urban heat island effect.

*Reference: Krayenhoff, S. and Bass, B. (2003). The Impact of Green Roofs on the Urban Heat Island: A Toronto case study. Report to the National Research Council, Institute for Research in Construction.*

\*The City of Toronto's Eco-Roof Incentive Program (ERIP) provides funds for green or cool roof retrofit projects on existing commercial, industrial and institutional buildings.

The program also provides funding for green roofs on new industrial buildings with a Gross Floor Area of 2,000 m<sup>2</sup> (21,528 sq ft) or greater, and new institutional and commercial buildings of less than 2,000 m<sup>2</sup>.

Eligible green roof projects receive \$50 / square metre up to a maximum of \$100,000. Eligible cool roof projects receive \$2 - 5 / square metre up to a maximum of \$50,000.

*Funding recipients must meet program eligibility criteria.*

### Building Characteristics and History

The 2,787m<sup>2</sup>, 4-storey building with a tower on the fifth storey was renovated in 1913, the 1950s, the late 1980s, and again in 2004-2005 after the Zeidlers took ownership. The Zeidlers inherited many problems with the building, some of which were difficult to solve with conventional construction. Though the building was originally designed to be energy efficient in 1890, the climate control systems needed to be updated. As a result of the extensive restoration of the building in 2004-2005, each hotel room now has its own unique heating/cooling system operated by the guests.

### Project Description and Background

The roofs of the hotel were built with a very steep pitch. When the Zeidlers repaired the roofs and eavestroughs to make them efficient and comply with the building code, a serious stormwater runoff problem ensued—there was flooding in the basement and kitchen with every mid-to-heavy rain event.

### Project Process

Because traditional solutions failed to remedy the hotel's flooding problems, the Zeidlers explored installing a green roof and hired Xeroflor due to their reputation and the work they had performed on other buildings owned by the Zeidlers.

### Cost Breakdown

Materials	\$44,965
Transport	2,300
Installation	7,580

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**Total Cost** \$54,845

### Outcomes

The installation of the green roof remedied the Hotel's flooding issues and diverted much of the building's stormwater runoff from the municipal sewage system. Stating that the cost savings and the health and safety benefits were tremendous, the Gladstone Hotel believes that the green roof is a valuable addition to the hotel and that it would have been very difficult to solve the runoff problem in any other manner.