

ECOroof

CASE STUDY



COOL ROOF PROJECT SUMMARY

A cool roof is a roofing system with high solar reflectivity and thermal emissivity to reduce the urban heat island effect and can be either a coating applied over an existing roof system or a new waterproofing membrane.

Building Type: Institutional

Total Cost (including engineering reports): \$337,808

Eco-Roof Incentive Program funding received (2009): \$14,355

Size of cool roof: 2,871 m²

Cost per square metre: \$66

Project timeline: 4 months

Black Creek Pioneer Village
1000 Murray Ross Parkway
Toronto, Ontario M3J 2P3

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Black Creek Pioneer Village

Operated by the Toronto and Region Conservation Authority (TRCA), Black Creek Pioneer Village is a recreation of life in 19th-century Ontario and gives an idea of how rural Ontario might have looked at that time. The Black Creek Pioneer Village Visitors' Centre is a multi-functional facility built to accommodate public audiences, museum education and exhibitions, collections management, meeting and dining facilities, food service, retail and offices.



Black Creek Pioneer Village installed its cool roof in 2009

“The eco-roof was the right solution for the replacement roof in our 30 year old building. As a public educational institution, we have a responsibility to implement sustainable practices and to educate visitors about the importance of sustainable practices for the future of the planet.”

Marty Brent, General Manager, Black Creek Pioneer Village



Call **3-1-1**



Quick Facts: Cool Roofs

- extend the lifespan of a roof by minimizing the extreme temperature fluctuations that cause wear and tear on traditional roofs;
- have the potential to reduce energy consumption on hot summer days by between .27 and 3.16 kWh per square meter of cool roof coverage;

Reference: Akbari, H. and Konopacki, S. (2004). "Energy effects of heat-island reduction strategies in Toronto, Canada." *Energy* 29: 191-210 (LBL Study).

- have the potential to reduce GHG emissions annually by an estimated 50 to 590 g of CO₂ equivalent per square metre of cool roof coverage;

Reference: Based on energy savings in Akbari, H. and Konopacki, S. (2004). "Energy effects of heat-island reduction strategies in Toronto, Canada." *Energy* 29: 191-210 (LBL Study).

- have the potential to reduce the ambient air temperature by .6 to 1.7 °C on hot summer days, thereby decreasing the urban heat island effect.

Reference: Akbari, H. and Konopacki, S. (2004). "Energy effects of heat-island reduction strategies in Toronto, Canada." *Energy* 29: 191-210 (LBL Study).

*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 m² (21,528 sq ft) or greater, and new institutional and commercial buildings of less than 2,000 m².

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 two-storey 5,110 m² building, which was constructed in 1985, has been in continuous use and still serves its original purpose.

Project Description and Background

The decision to install a cool roof when the roof required replacement was guided by the TRCA's corporate ethics and strategic policies as well as their concern about energy efficiencies.

The TRCA hired an engineering consultant to spec the project and identify appropriate roofing types, which led to the choice of a specific product, and a supplier who licensed specific contractors. The TRCA tendered the eco-roof specifications to the short list of contractors provided by the supplier and received nine quotes.

Outcomes

- Keeps building cooler in summer, reduces energy used for air conditioning.
- Roof product consists of materials that are 100% recyclable at end of life.
- Consistent with Black Creek Pioneer Village's corporate environmental philosophy.
- Black Creek Pioneer Village provides information about its sustainable practices to the public.



Before Eco-Roof installation