# ECOroof

## Commercial CASE STUDY

### GREEN ROOF PROJECT SUMMARY

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|---|---|
| **Type of green roof:** | Semi-intensive |

An intensive green roof is comparable to a rooftop garden. They require deeper growing medium and more maintenance to grow ornamental grasses, flowers, shrubs, bushes and/or trees.

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| **Building type:** | Commercial |
| **Total cost:** | $48,000 |
| **Eco-Roof Incentive Program funding received (2015):** | $9,375 |
| **Size of green roof:** | 125 $m^2$ |
| **Cost per square metre:** | $384 |
| **Project timeline:** | 2 months, including additional roof waterproofing |
| **Volume of stormwater diverted from municipal system per year:** | 65,545 litres estimated |
| **GHG emission reductions per year:** | 271 kg of $CO_2$ equivalent estimated |

**Top Drawer Creative Inc.**
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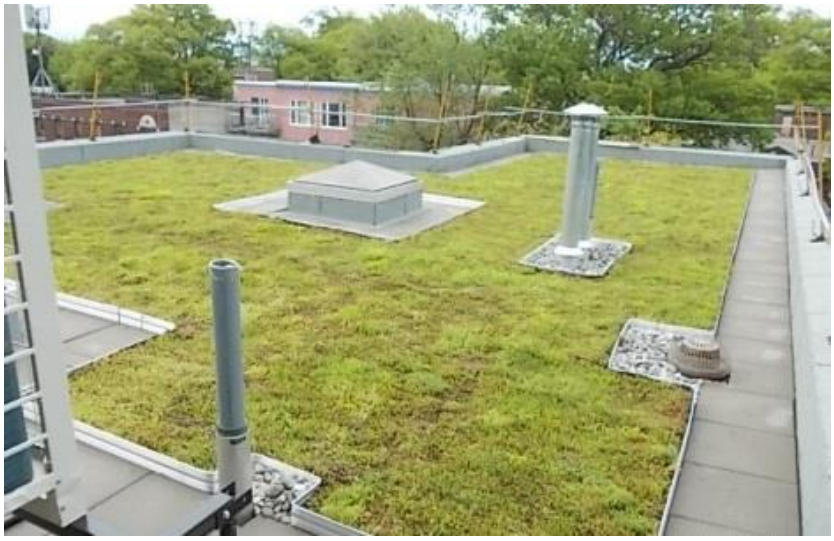
Fall 2016

## 2216 Queen Street East

The Top Drawer Creative is a full-service advertising agency that practices the art of influence for social good. As Canada's first B Corp certified ad agency, the company works hard to practice business that is good for people, the planet and their clients' profits. Top Drawer Creative's portfolio includes a diverse range of exciting brands and business areas in the following sectors: adventure sports, recreation, health, sustainability, not-for-profit and specialty retail.



*The extensive green roof at 2216 Queen Street East is planted with a mix of easy to maintain and drought tolerant sedum. Image credit: Top Drawer Creative.*

"The incentive from the City and the professional and careful attention we got from the Eco-Roof Incentive Program team made it an easy and worthwhile project. We have provided tours of our green roof to a number of local businesses and homeowners to inspire them to consider a green roof for themselves."

Howard Chang, President & CEO, Top Drawer Creative

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## QUICK FACTS: GREEN ROOFS

- Filter stormwater and reduce combined sewer overflow by delaying flow of runoff.
- 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 kilowatt hours (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 provides funds for green roofs and cool roofs on existing buildings, new buildings with a gross floor area less than 2,000m$^2$, and new construction projects by the Toronto School Boards and not-for-profit corporations.

Eligible green roof projects receive $100/m$^2$ and eligible cool roof projects receive $2 - $5/m$^2$.

### Building Characteristics and History

Top Drawer Creative is housed in a 3-storey building in the heart of the Beaches neighbourhood.

In line with the company's commitment to environmentally responsible business practices, Top Drawer Creative has incorporated leading-edge, sustainable building strategies into the entire office space (e.g., using renewable energy, reclaimed or recycling materials and fair trade products).

### Project Description and Background

The green roof installation at 2216 Queen Street East was part of Top Drawer Creative's plan to achieve LEED platinum certification, and become 100 percent carbon neutral. The green roof is an extensive or shallow green roof and contains a mix of sedum plants (a low growing class of succulents) grown in 100 mm of top soil and installed on top a root barrier to protect the roof's waterproofing membrane.

### Project Process

The green roof was designed collaboratively by the project architect, construction company and property owner to maximize coverage on a roof that was dense with HVAC equipment and other physical infrastructure. Installation was performed as part of the overall expansion of the building which included the addition of a 3rd floor over approximately two months.

### Cost Breakdown

An approximate breakdown of the project costs is provided below as the total project cost was integrated with the building renovation.

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| Design fees | $1,800 |
| Structural assessment | $1,100 |
| Additional structural reinforcement | $15,100 |
| Waterproofing | $9,00 |
| Materials and installation | $21,000 |
| **Total** | **$48,000** |

Annual maintenance costs are approximately $1,200.

### Outcomes

The green roof has successfully diverted the majority of rain water from the stormwater runoff system and created an environment for pollinators who love the flowering plants. It has also been a benefit to the company's brand and a showcase that clients and staff value.

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