

# GREENING THE CITY

## GREEN ROOFS

### WHAT IS IT?

The idea of using plants to insulate or waterproof roofs is nothing new. Many centuries ago, the inhabitants of Northern Europe covered their homes with a layer of turf to keep out the cold.

Dating from the 1980s, modern vegetated roofs, commonly referred to as **green roofs**, are inspired by these ancient techniques. With the introduction of favourable environmental policies, first in Europe and then in North America, they have gained a new lease on life. They have changed a great deal over the years and now have a wide variety of looks and functions.

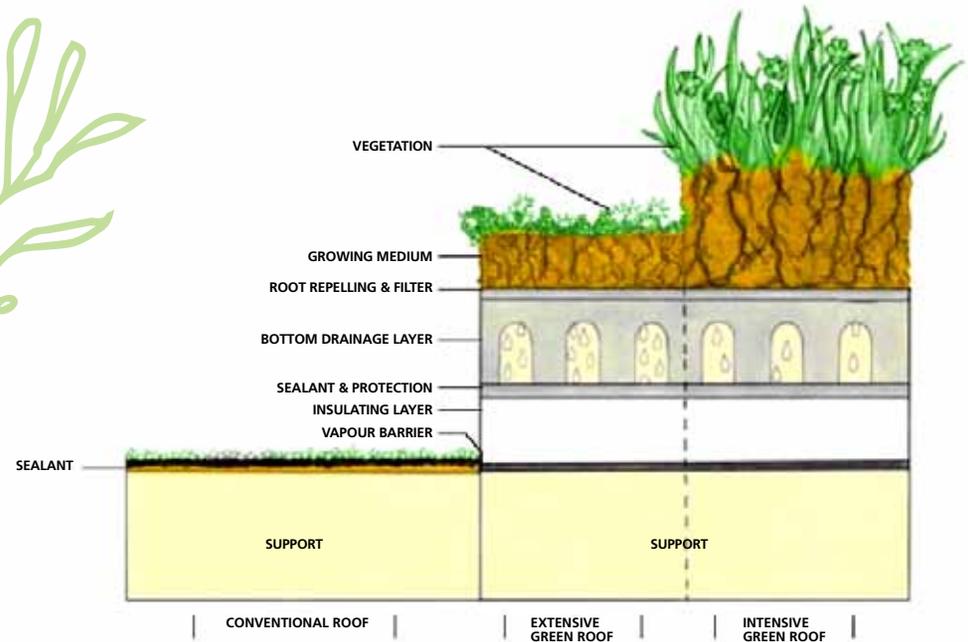
### WHAT IS IT USED FOR?

Traditional roofs tend to re-emit the sun's energy that they have absorbed during the day, contributing to the well-known problem of heat islands in our cities.

With green roofs, buildings are better insulated and use less energy. As a result, the issue of **heat islands** is alleviated. In addition, green roofs:

- › reduce the quantity of rainwater running into our sewers;
- › protect roofs and increase their life span;
- › do not produce any waste (asphalt, gravel, etc.);
- › improve air quality.

Green roofs can also have recreational and aesthetic functions and provide a home for greater biodiversity. As a bonus, they can be used to grow edible plants!



Coupes comparées d'une toiture traditionnelle, d'un toit vert extensif et d'un toit vert intensif<sup>1</sup>

### HOW IS IT MADE?

Green roofs can be installed over traditional roofing materials or underground load-bearing structures (like parking garages). They comprise several distinct layers:

- › a layer of vegetation;
- › a growing medium;
- › a drainage and water retention system;
- › a barrier to prevent roots from piercing the roof's waterproof membrane.

There are **extensive** green roofs, which are lighter, and **intensive** green roofs, which are heavier. The latter have a greater variety of uses (for example, it is possible to walk on them) but require a stronger support structure.

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### IN QUEBEC



The vegetated roof on Montreal's Centre for Sustainable Development absorbs up to 23,000 litres of rainwater, reducing the incidence of wastewater overflows into the St. Lawrence River.<sup>2</sup>

### IN THE WORLD



The U.S. green roof capital is Chicago, where an innovative program has led to the installation of over 200 such roofs, including one on City Hall.<sup>3</sup>



The green roof that tops the California Academy of Sciences in San Francisco is one of the most spectacular in the world. Not only does it provide natural air-conditioning, but it also recovers rainwater, imitates the surrounding landforms and provides a home for 1.7 million local plants!<sup>4</sup>

<sup>2</sup> <http://www.hydroquebec.com/visit/montreal/mdd.html>

<sup>3</sup> <http://inhabitat.com/chicago-green-roof-program/>

<sup>4</sup> <http://www.calacademy.org/exhibits/living-roof>