
GREEN ROOFS

- A significant environmental improvement to roofing applications has been the “invention” or “adoption” of green roof practices.
- Green roofs are installed over a modified version of more conventional flat roofs, and are normally comprised of a “system” that is sold by several green roof manufacturers (like Soprema)
- These roofs have been used widely in Europe for many years

Two main types:

- intensive (thicker growth medium required for larger plants)

- extensive (thinner, lighter growth medium required for smaller plants) - ***this one is more popular***

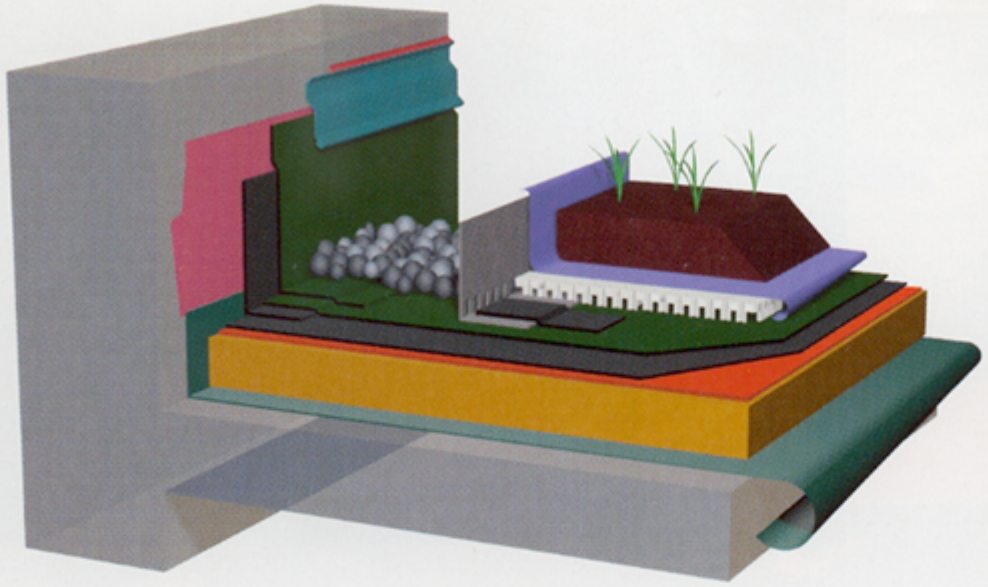
Very old green roof over the Halifax Citadel.

Sopranature

NATURE RULES THE ROOF!

SOPREMA

Quality assured



- Vegetation
- Sopraflor Growing Medium
- Soprafiltre
- Sopradrain PSE or GEO
- Curb
- Ballast
- Sopralene Flam Jardin Cap Sheet
- Base Sheet Options:
  - Sopralene Flam 180
  - or Elastophene Flam
  - or Self-adhesive Membrane
- Elastocol 500 Primer
- Support Panel for Membrane
- High Density Thermal Insulation
- Caulking Mastic
- Vapour Barrier
- Metal Flashing
- Support

THE SOPRANATURE SYSTEM

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SOPRALENE FLAM JARDIN WATERPROOFING MEMBRANE	The 2-ply **SOPRALENE FLAM JARDIN** system waterproofs the deck. The membrane contains root repelling agents that prevent root penetration.
DRAINAGE LAYER	Its purpose is to facilitate water flow to the roof drains. It is composed of one of the following materials, depending on roof slope: **SOPRADRAIN PSE** expanded polystyrene (0-5% slope), or **SOPRADRAIN GEO** drainage geotextile (>5%).
FILTER	**SOPRAFILTER** is a non-woven synthetic geotextile that prevents fine particles from clogging the drainage layer.
GROWING MEDIUM	**SOPRAFLOR** growing medium is designed and manufactured to achieve optimum water retention, permeability, density and resistance to erosion in order to support lush vegetation over the entire roof.
VEGETATION	The vegetation is an integral part of the **SOPRANATURE** system and has been selected for its ability to adapt to extreme weather conditions. In extensive systems, ground covers are used, that is, annuals, biennials and perennials that regenerate themselves and spread naturally over the growing medium. In semi-intensive systems, perennials, shrubs and grass grow in an irrigated rooftop garden.

EDGE PROTECTION

Edges and roof structures must be protected by a 500 mm band of gravel or pavers. A prefabricated border of precast concrete, metal or wood is installed to contain the vegetation areas.

Sopravert is Sarnafil's European green roof system. It maintains that the green roof also helps to buffer from the effects of sound as well as weather, and controls/delays runoff from heavy rain.

Mountain Equipment Coop, Toronto:

- This environmentally conscious retailer has chosen to use green building practices on their buildings.

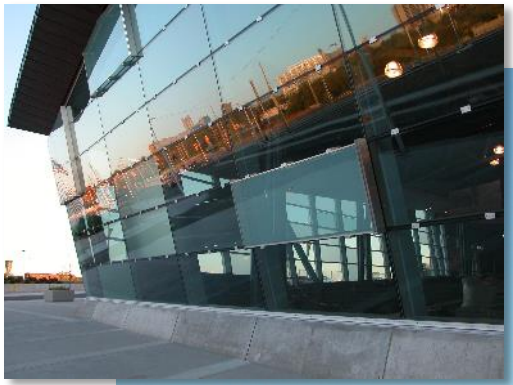
Vancouver Public Library:

The green roof on VPL is not accessible to the public (has no guard rails at the edge) and is planted with grasses. The idea being to reduce urban heat island while providing a nice view for taller buildings adjacent

YMCA Environmental Learning Centre:

- This building illustrates the ability to install a green roof in a sloped situation

Herb garden green roof on Fairmont Hotel in Vancouver



Freshly planted green roof on Canadian War Museum (May 2005)


May 2012

Partial green roof on the Salt Lake City Library by Moshe Safdie

Renzo Piano Science Museum, San Francisco

Operable skylights to vent heat from interior

Drainage paths for excess water

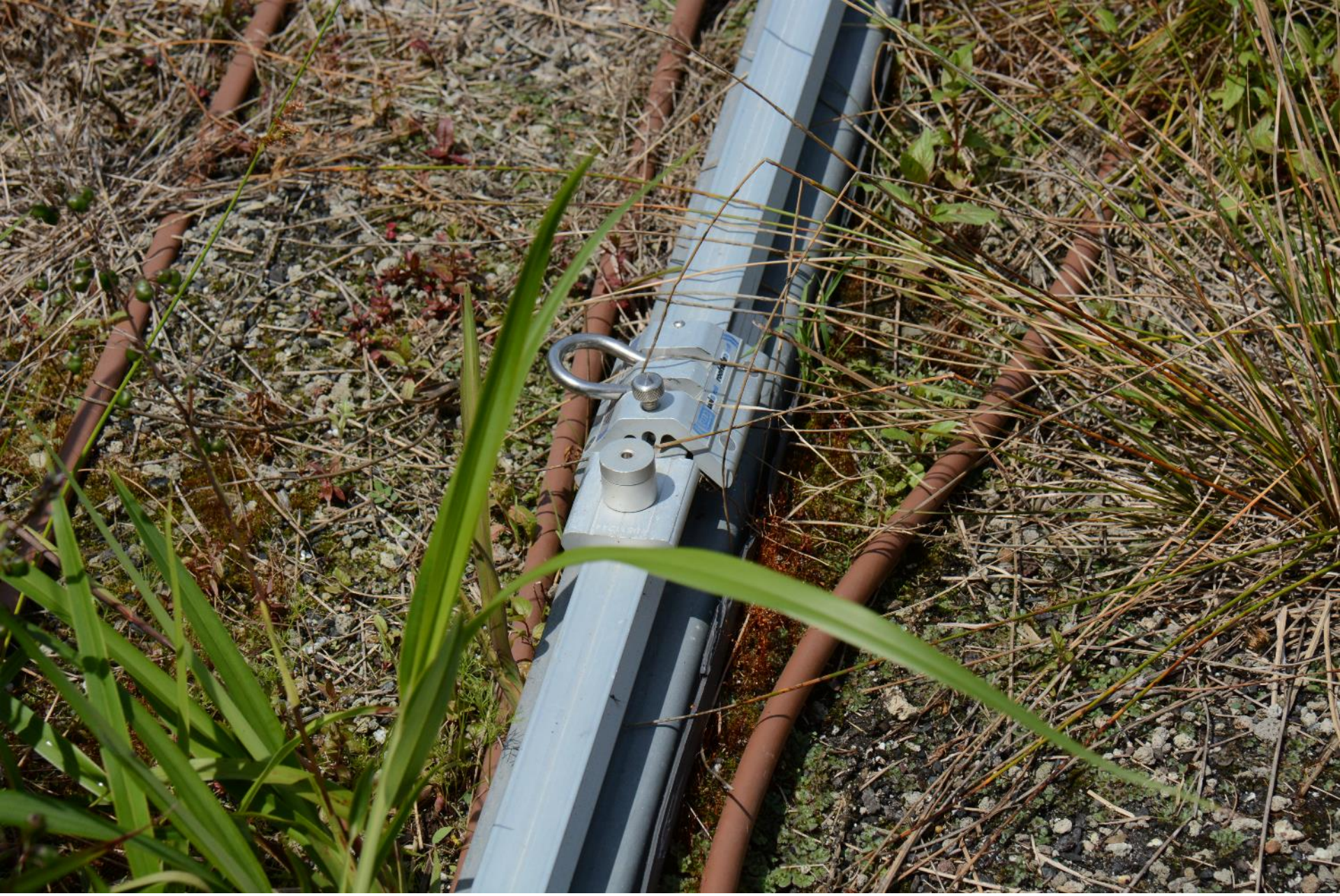
Boston Children's Museum: green roof panels/squares

Caixa Forum, Madrid. 2007. Patrick Blanc

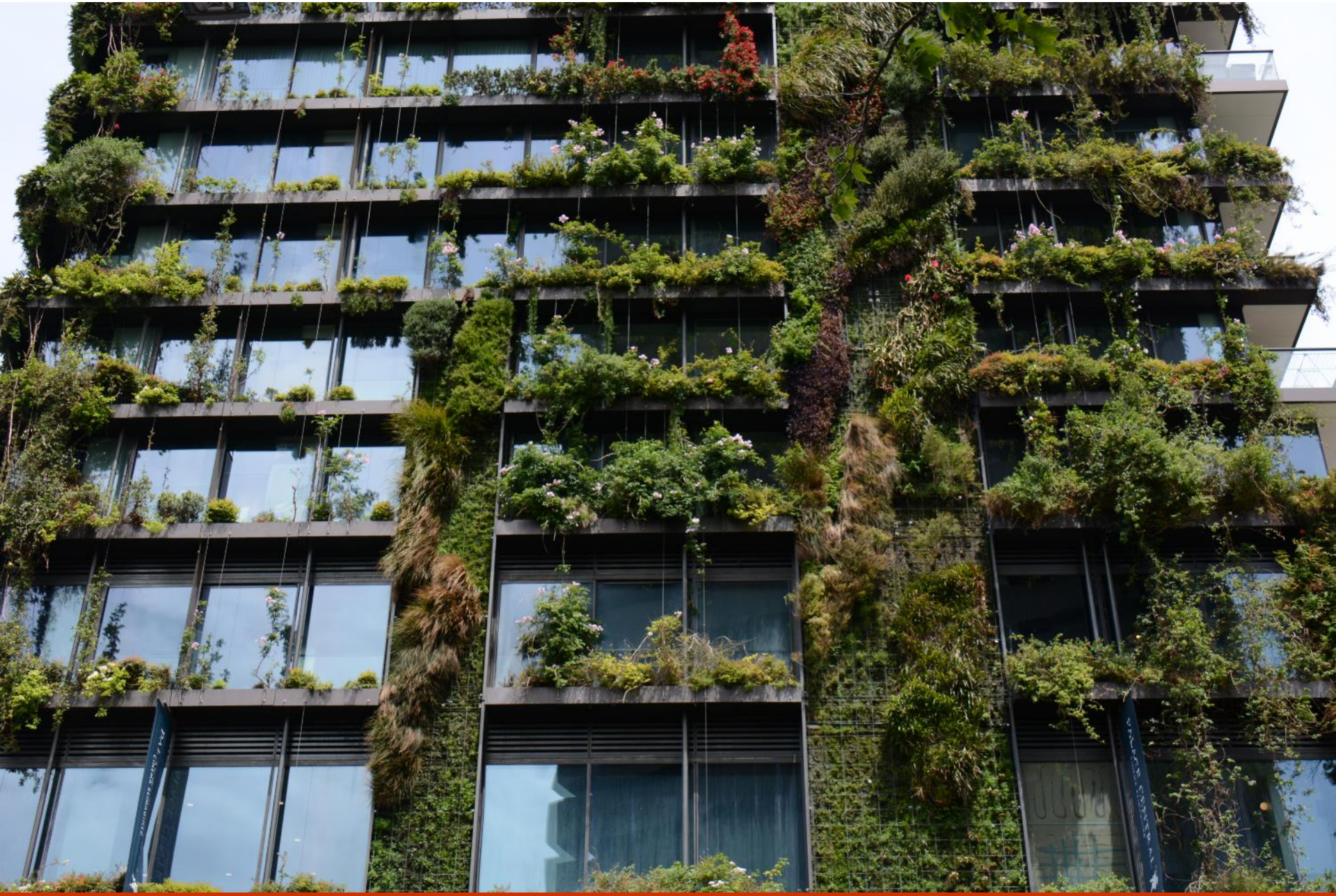
Miami Art Gallery. Herzog & deMeuron.

Branley Museum. Ateliers Jean Nouvel.

Convention Centre. Sydney, Australia

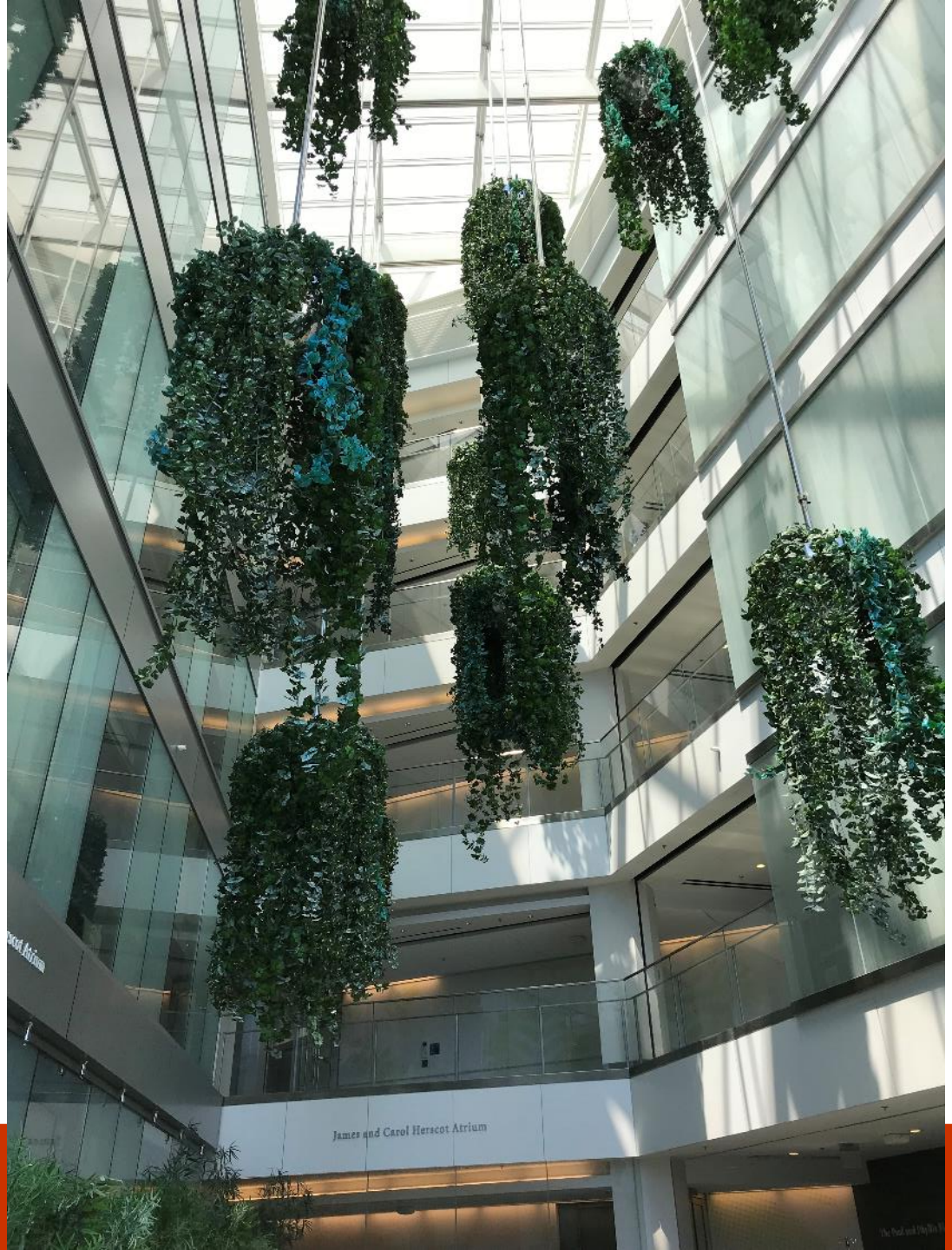


One Central Park, Sydney, Australia, Ateliers Jean Nouvel



Healing Garden, Massachusetts General Hospital, Boston


James and Carol Herscot Atrium


James and Carol Heracot Atrium


FIRE
FIRE

Green Roof Benefits:

- Planting reduces *urban heat island effects*
- planting can be used to absorb rain water and decrease water that must be processed by the urban storm sewer system
- visually pleasing
- additional insulation
- City of Toronto now has a Green Roof By-law that requires Green Roofs on new commercial buildings.

Green Roof Drawbacks:

- Why not do a green roof?
- Additional first expense
- additional structure required to support roof
- plants must be hardy and not need watering (over the long term)
- watering essential during the first 2 or so years until roots become established
- Does not benefit insulation as materials are damp so conductive rather than insulative