

Green roofs seed innovation in B.C.

BCIT leads North American schools in research projects

Kim Davis, Special to the Vancouver Sun

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For millennia humans have integrated living vegetation into their buildings. Turf roofs helped insulate dwellings across Europe and North America. Elaborate hanging gardens purportedly consoled homesick queens in Assyria. Rooftop gardens set the stage for open-air, summer theatre on Broadway. Small rooftop meadows helped many a Hornby Island home blend graciously into their rural surroundings.

In the last 30 or so years, age-old vernacular traditions have begun to evolve into high-tech, high-performance living systems created by the marriage of architectural technology with landscaping, a union that is generating a rapidly growing industry of "high tech" living roofs and walls here in B.C. and across the globe.

The week of Sept. 12 - 17 marks green roof week for enthusiasts as the World Green Roof Congress gets under way in the Swiss city of Basel. Specialists from diverse disciplines - architects, landscape architects, urban planners, roofing manufacturers and plant and soil scientists - will descend upon this pioneering city to hear the latest on green-roof legislation, implementation, design and development.

Long gone are the days of layered birch bark covered in thick prairie sod, or even conventional waterproof membranes overlaid with topsoil and a sprinkling of wild flowers. Now it is components and systems: root penetration barriers, injection moulded drainage mats, growing media (only reluctantly called "soil" for the benefit of laymen), and carefully selected and "installed" vegetation.

At the forefront of research in North America is the B.C. Institute of Technology. Its Green Roof Research Facility is one of only two dedicated centres on the continent monitoring stormwater-source control and the thermal performance of green roofs. BCIT recently expanded the project's scope with the creation of the Centre for the Advancement of Green Roof Technology.

Maureen Connelly, an architect and research program head for the facility, says the response and support from local municipalities has been incredible in the last year, and the number of people contacting the GRRF has increased fivefold during the same time.

Connelly attributes the dramatic increase in interest to two key factors . . .

- 1) Heightened awareness about vegetated roofs;
- 2) The rapidly growing number of green roofs being proposed and built in the Vancouver region. Just a few of the bigger and higher profile projects recently completed or planned include the Electronic Arts building in Burnaby, the Maple Leaf Storage Facility in West Vancouver and BCIT's Research Canopy in Burnaby.

The results of the GRRF's project will help improve our understanding of the many benefits of green roofs specific to our region, not to mention dispel the persistent misinformation regarding their construction, performance, and validity. The results are also expected to have a direct applicability to

the future densification of the Lower Mainland.

Vancouver has the highest percentage per capita in Canada of individuals living in multi-family housing and the highest population density per square kilometre in Canada. It also has one of the fastest growing downtown cores in North America, second only to New York.

Densification is a key tool for sustainable development and as Connelly notes the data collected from GRRF will contribute to "a modelling tool developed for the restoration and protection of the regional watersheds."

What does this mean for the average homeowner and renter? It means that the facility's research will help qualify and more importantly, quantify, how green roofs could help mitigate the urban heat island, lowering greenhouse gases, reducing flooding caused by stormwater runoff and decreasing heating and cooling costs.

If the centre's response over the past year is any indication, participating industries

- roofing companies, soil manufacturers, irrigation specialists -- are clearly climbing aboard the verdant trend as they seek to develop products that cater to the specific demands, and increasing performance expectations, for vegetated-roofing.

Tom McConkey, an owner of Stream Organics Management, a local manufacturer of growing media, describes how his product, like other green roof "components," has had to adapt to these new expectations.

"The whole concept of vegetated roofs had to move from standard plant and soil selections to those which are going to perform well under the specific constraints, demands and stringent requirements of green roofs."

For more information about the BCIT Centre for the Advancement of Green Roof Technology and green roof research and events check out www.greenroof.bcit.ca

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