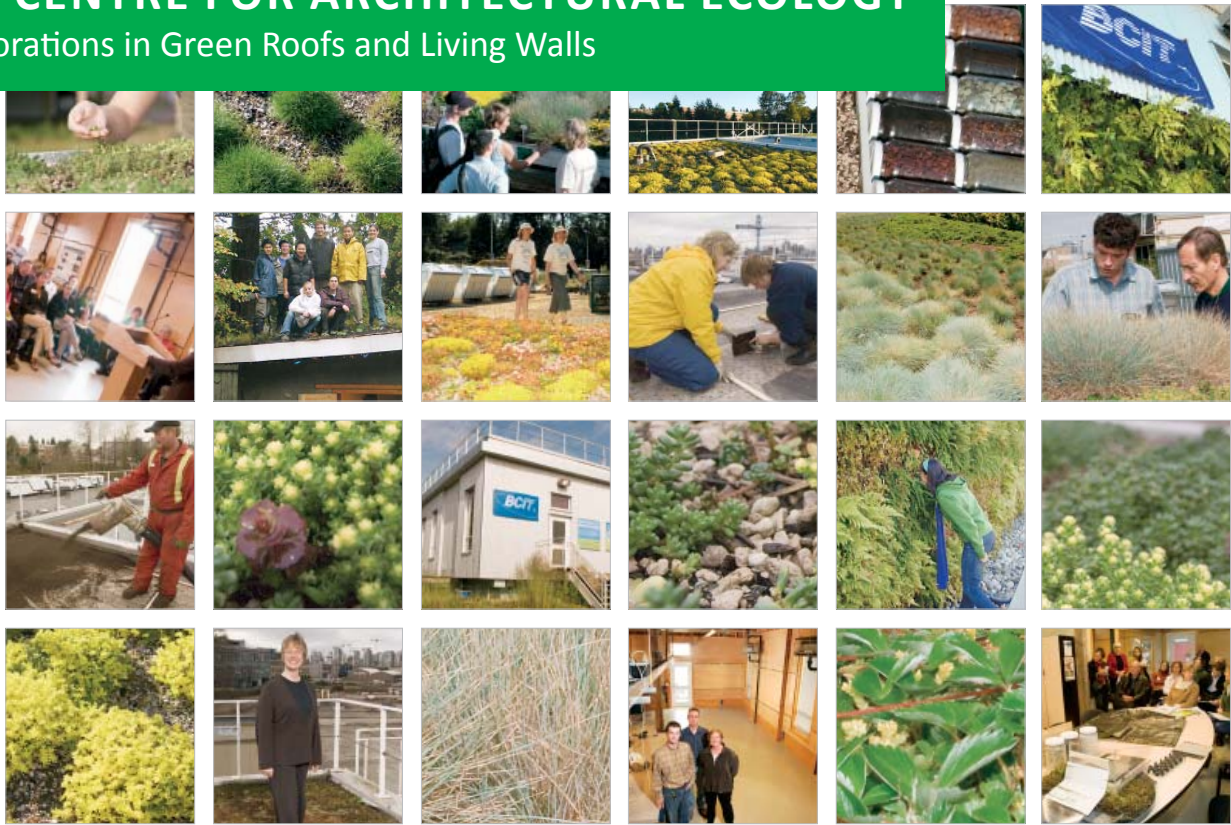




BCIT CENTRE FOR ARCHITECTURAL ECOLOGY

Collaborations in Green Roofs and Living Walls



Canada's diverse climate is the perfect environment to test and improve the development of green roof and green wall technologies. The outcome of this research will help to build a green technology legacy for the next generation of Canadians.

– Mark Warawa, MP for Langley, 2008



SCHOOL OF
CONSTRUCTION AND
THE ENVIRONMENT

FROM THE ASSOCIATE DEAN



Dear Friend,

On behalf of Maureen Connelly and the BCIT School of Construction and the Environment (SoCE), we are pleased to present you with an opportunity to support BCIT's sustainability initiative.

Sustainability is a central theme at the School as we respond to environmental issues and position ourselves to address new and emerging disciplines relating to the built and natural environment. Thanks to a strong leadership team and tremendous support from our donors, we are engaged in several innovative initiatives, like green roof and living wall research projects that play an important role in the local and global green agenda.

In this proposal, we present a strong case for supporting the BCIT Centre for Architectural Ecology's drive to mainstream green roof and living wall systems in BC. We hope you will be inspired by the Centre's scientific and educational achievements in this area, and motivated to engage in this important ecological research with us.

We thank you for your consideration and welcome your participation.

Best wishes!

A handwritten signature in black ink, appearing to read 'Wayne Hand', written in a cursive style.

Wayne Hand

Associate Dean, School of Construction and the Environment

BCIT Centre for Architectural Ecology

Collaborations in Green Roofs and Living Walls

Executive Summary

The BCIT Centre for Architectural Ecology¹ invites you to join us in achieving the Canadian government's vision of a green technology legacy.

Why is a research centre for collaborations in green roofs and living walls necessary? The Royal Architectural Institute of Canada states that Canadians and many levels of government were previously unaware of the fact that buildings are the biggest source of green house gas emissions and energy consumption in Canada and around the globe. The Centre for Architectural Ecology applies a diverse range of research tools and best practices, that help buildings to reduce emissions and conserve energy.

With our combined educational expertise and strong industry connections, we have positioned the Centre as a leader in green roof and living wall technology research and education. However, increased funding of collaborative green technology programs is needed to make a lasting impact in the region, maintain the Centre's research activities, and translate its findings to leading edge architects, developers and policy makers.

If you desire to be a leader of environmental sustainability, your participation and financial support will be critical to securing the future of this industry. With your gift, you will receive great recognition benefits and the opportunity to contribute to Canadian research and development through the Centre for Architectural Ecology.

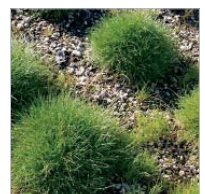
Since 2003, with the support of the National Science Engineering Research Council of Canada, Western Economic Diversification Canada (WD) and the collaboration of industry partners, we have worked to advance research, education, technology and policy development in the region. On the commercial side, we support the growth of a local, national, and global green roof industry.

Our expanding research and technology transfer plan is underway thanks to an additional \$500,000 contribution from WD. Private and industry support is required to match WD's funds in 2009 and 2010. Our long term financial goal from 2011-2015 is to raise an additional \$250,000 annually to support the Centre.

In collaboration with our industry partners, policy makers, academic institutions, friends and students, we can continue our applied research efforts so vital to the successful performance of green roof and living wall systems, which have the potential to revitalize the overall health of our communities.

The following pages outline the next phase of the Centre's plans, highlighting new areas of research and educational technology transfer initiated by faculty director, Maureen Connelly and the Centre's team. We look forward to your feedback on our proposal and we are open to any enhancements.

¹The Centre for Architectural Ecology was formerly known as the Centre for the Advancement of Green Roof Technology. Our new name reflects the collaborative nature of our expanding research themes, our developing educational mandate, and our commitment to green roofs and living walls as fundamental in the evolution of the urban environment into balanced ecosystems.



Moving Ahead

In 2009 and 2010, the Centre aims to promote the Greater Vancouver region as the heart of green roof and living wall technology research and industry development in Canada. Activities in this period are designed to accelerate their environmental, economic and educational impacts. In the fall of 2010, BCIT will also be the academic co-host of the major international conference Greening Rooftops for Sustainable Cities to be held in Vancouver.

Here are a few examples of current research infrastructures at the Centre for Architectural Ecology for 2009 and 2010:

The Dedicated Green Roof Research Facility

– three roof sections that are fully instrumented to measure performance of green roofs. The facility is also instrumenting seven wall sections to measure living wall performance.

Acoustic Evaluation Facility

– a chamber designed and commissioned for acoustics testing of interchangeable green roof and living wall systems.

Roofing Evaluation Module

– a self-contained unit that allows researchers to evaluate and compare the performance of green roof systems through field monitoring for industry clients.

Capital Regional District Green Roof and Living Wall

– stormwater and thermal performance monitoring of a pre-cultivated extensive green roof system and a living wall system. This is the first ongoing living wall monitoring program in Canada.

Environmental Impact

The Centre's ongoing green roof and living wall technology projects will continue to improve the ecological balance in the region's high density urban cities. Broadened initiatives include:

- evaluating energy efficiency and stormwater retention of green roofs and living walls in our region's different climatic zones
- evaluating the technology's capacity to reduce green house gas emissions (GHGs) by reducing both the urban heat island effect and energy consumption
- assessing the technology's potential to reduce sound transmission through roofs and walls and noise build up in habitable outdoor spaces
- evaluating the feasibility of Pacific Northwest native plants on green roofs and living walls.

Current examples of green roofs and living walls at major locations are: the Vancouver Trade and Convention Centre, the Four Seasons Hotel, the Vancouver Aquarium and the new Canada Line station at the airport.

Elevated Research Platform

– a 1,400 square metre roof hosting a weather station and data acquisition system to support rainfall distribution analysis, and acoustic and plant research.

Economic Impact

As local and national regions continue to adopt public policies that support green technologies, we can expect to see increases in job creation, product commercialization and community cost savings.

For example, to boost the sale of green roof and living wall technology products in the local marketplace, the Centre is assisting small and medium-sized enterprises with equipment resources, and expertise in product testing and development. Systems are evaluated through the country's only roof evaluation module (REM) simulating a complete roof installation with a controlled indoor environment.

Results from the Centre's programs will inform landscape architects, construction professionals, policy makers and other environmental stakeholders of the capacity for green roofs and living walls to: reduce the demand on stormwater infrastructure; lower the urban heat island effect; increase air quality and reduce noise pollution; which means healthier people and less stress on our health care system.

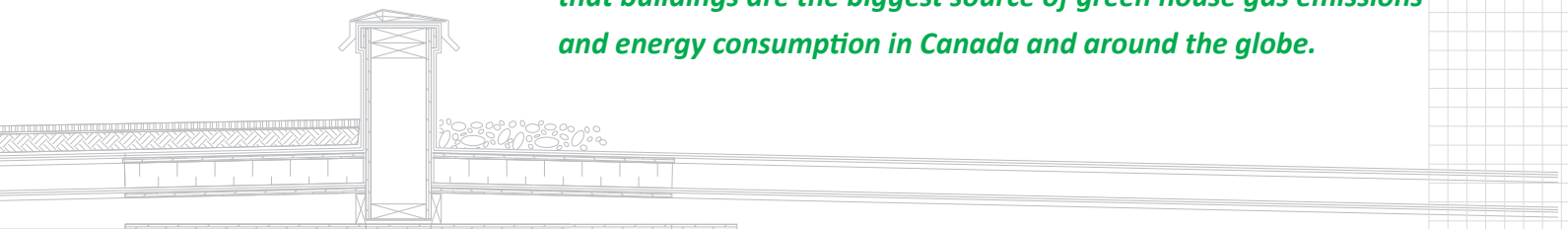
Educational Impact

In 2005, the Centre developed and offered Canada's first green roof course in the BCIT Bachelor of Technology – Architectural Science four year degree program. In addition, one hundred and twenty students graduate annually from the two-year BCIT diploma program in Architectural and Building Engineering Technology, which has green roof and living wall-related outcomes in several courses. These graduates have tremendous influence in spreading the advantages of green technologies in the workplace.

The Centre supports graduate-level student research in partnership with regional and international universities; and applied training for highly qualified personnel in the landscape design and construction industry through the Centre's professional development "GROW" courses. We will also continue to involve BCIT students in the renovation and instrumentation of the institute's green roof and living wall systems.



The Royal Architectural Institute of Canada states that Canadians and many levels of government were previously unaware of the fact that buildings are the biggest source of green house gas emissions and energy consumption in Canada and around the globe.



Recognition and Donor benefits

BCIT acknowledges the importance of on-going recognition for leadership gifts in support of applied research. We will work closely with our donors to ensure a jointly approved recognition plan. Components may include:

- Naming of the new Centre for Architectural Ecology (subject to Provincial Government approval) for a \$750,000 contribution
- Recognition in media releases and through BCIT communication vehicles (web, print, advertising) supporting the Centre
- Recognition on the Centre's official communication material
- Signage recognition on-site
- Use of the Centre's brand name, logo and related documentation
- Invitation to participate in ribbon cutting ceremonies and major announcements/developments as a leadership partner
- Invitation to the Centre's major events, as well as speaking and recognition opportunities (as appropriate) at such events.

Project Leadership

Maureen Connelly, BSc, BEDS, MArch, MAIBC

Maureen Connelly is the founder and Director, Faculty for the BCIT Centre for Architectural Ecology. She has an overall research focus on the development of the architectural impact model of green roof and living wall systems and is the Centre's research lead on their environmental benefits. Maureen is currently quantifying the acoustical capacity for green roofs to reduce sound transmission into and out from buildings and reduce noise build up in urban areas.

In 2004, Maureen received the BCIT Earth Apple Award for outstanding effort and commitment to our environment, and the BCIT Applied Research Award for outstanding contribution in terms of advancement of knowledge, and advancement of economic and societal well-being through the application and implementation of new technology. She has published numerous articles on the industry and is a recognized leader in the field.



*Maureen Connelly, MAIBC
Director, Faculty*



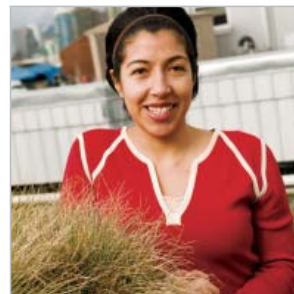
*John Compton-Smith
Research Analyst*



*Janet Snell, MAIBC
Faculty Researcher*



*Jonathan Hays
Administration and Technology
Transfer Coordinator*



*Kerly Acosta
Faculty Researcher*

Research Team

The Centre has a well educated, experienced and dynamic research team with members from diverse educational disciplines including architecture, landscape architecture, mechanical engineering, instrumentation, construction, business development and marketing, and education and technology transfer. All members of the team have strong teaching credentials and experience. Individual profiles are available on greenroof.bcit.ca.

British Columbia Institute of Technology

BCIT is one of the largest post-secondary institutions in British Columbia and the only one with a provincial mandate. With an annual budget in excess of \$240 million, it delivers courses of applied study leading to certificates, diplomas and degrees in technologies, trades, business and health sciences from its five campuses in Vancouver. BCIT's mission is to build pathways for career success in the global marketplace through teaching excellence and applied education and research. Since 1964, BCIT has provided more than 100,000 students with job-ready skills and employers with highly-skilled, knowledgeable employees.

For further information, please contact:

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Please accept BCIT's deepest appreciation for your consideration of this request. We are confident that you will find this project worthy of your support, and are standing by should you have any questions or require anything further.



Fair Gordon
Marketing/Communications/
Business Development



Cristian Secieru
Research Analyst



Nicolas Rousseau
Research Assistant



Christine Thuring
Sessional Faculty

To view profiles about faculty, please visit greenroof.bcit.ca



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