



LIVING ARCHITECTURE MONITOR

A GREEN ROOFS FOR HEALTHY CITIES PUBLICATION

VOLUME 15 / ISSUE 4 / WINTER 2013-14

2013 AWARDS OF EXCELLENCE
WINNERS

INTERNATIONAL ISSUE

Living Architecture Industry and Policy Overseas
International Green Wall Plant Inspiration
Journal of Living Architecture Launch + more!



Calculate Your Energy Savings

Replacing a traditional dark roof with a green roof from Sika Sarnafil can reduce your energy bill by more than 20%.

Performance that Pays. Sustainability that's Smart.

Green Roof Systems from Sika Sarnafil benefit you and the environment by reducing building energy consumption, extending the life of the waterproofing membrane and reducing storm water runoff. Unparalleled performance—designed to meet your sustainability goals of energy efficiency, environmentally preferable products, greenhouse gas reduction, and waste minimization—make Sika Sarnafil the choice for facility managers, roofing consultants, architects, and contractors alike. To learn more about how our products can help you achieve your sustainability goals, visit SustainabilityThatPays.com.



Sika Sarnafil, A Division of Sika Corporation
Tel. 1-800-451-2504, Fax: 781-828-5365, usa.sarnafil.sika.com



INSIDE

FROM THE FOUNDER /

1 PUTTING GREEN INFRASTRUCTURE ON THE MAP

STRATA /

2 PRINCE GEORGE'S COUNTY MANDATES GREEN ROOF PROFESSIONALS

2 ONTARIO GREEN INFRASTRUCTURE DESIGN CHARRETTES FUNDED BY METCALF FOUNDATION

ON THE ROOF WITH... /

4 ON THE ROOF WITH... GLOBAL INDUSTRY LEADERS: North American living architecture leaders discuss international developments and the rise of the multinational green roof and wall company

POLICY AND STANDARDS /

8 LIVING ARCHITECTURE OVERSEAS: Industry and policy development in the international green roof and wall market

RESEARCH /

10 JOURNAL OF LIVING ARCHITECTURE: Issue 1

12 RESILIENCY AND LIVING ARCHITECTURE: The Great Community Resiliency Project Contest—Top picks and winner!

14 INDUSTRY RESEARCH COLLECTION: What green roof and wall research was published August to October 2013?

PROFILES /

15 LEADERSHIP – SUN, SURF AND GREEN ROOFS: Caroline Tomlin, GRP, LEED AP, BLA

16 PLANT – INTERNATIONAL GREEN WALL PLANT INSPIRATION: Flax Lily and Kiwi: Two lesser-known green wall plant species to add to your plant palette

18 PROJECT – THE FUTURE OF LEAK TESTING?: Electric field vector mapping technology brings waterproof testing into the 21st century

21 PROJECT – 2013 AWARDS OF EXCELLENCE WINNERS

GRHC UPDATE /

32 NEW GRHC BOARD MEMBERS

32 PROFESSIONAL CALENDAR

34 NEW CORPORATE MEMBERS

34 GRHC BUYERS GUIDE

ON SPEC /

35 WHY IRRIGATE?: Regardless of the location and climate of your green roof, irrigation is the key to success

ON THE COVER: The Award of Excellence winning green wall project at the Drew School in San Francisco, California. Image provided by: ROMA Design Group

FaçadeScape™

Green Wall Systems

- Covers walls & pillars
- Reduces heat gain
- Easy to specify & install
- Protects building exteriors
- Promotes healthy plant growth
- Manufactured in ISO 9001 and ISO 14001 compliant facilities for environmental responsibility



Carl Stahl
DÉCORCABLE
The Best InTension™

Toll Free 800-444-6271
sales@decorcable.com
www.decorcable.com

LIVING ARCHITECTURE MONITOR[®]

VOLUME 15 / ISSUE 4 / WINTER 2013-14

LIVING ARCHITECTURE MONITOR IS PUBLISHED FOUR TIMES PER YEAR BY
GREEN ROOFS FOR HEALTHY CITIES (WWW.GREENROOFS.ORG)

EDITORS

Steven W. Peck, GRP, Editor-at-Large
& Founder, speck@greenroofs.org

Jennifer Foden Wilson, Editor,
jfodenwilson@greenroofs.org

Tracy Jackson, Assistant Editor,
tjackson@greenroofs.org

IR&Co., Design and Art Direction,
ianrapseyco.com

CONTRIBUTORS

Matthew Durrett, Paul Erlichman, Vincent Javet, Manfred Köhler, Todd Polderman, Dorthe Romo, Marguerite Wells

Ashley Karas, Intern,
akaras@greenroofs.org

Victoria Fratin, Intern,
vfratin@greenroofs.org

ADVERTISE

Contact editor@greenroofs.org
or 416-971-4494 ext. 231

*Rates and insertion order forms available at
www.livingarchitecturemonitor.com*

SUBSCRIBE

Subscriptions to the magazine in either a print or digital format are included with membership to Green Roofs for Healthy Cities. Four levels of membership are available (in U.S dollars):

1. Supporter Membership - \$55
2. Individual Membership - \$160
3. Affiliate Membership - \$100
(for employees of corporate members)
4. Corporate Membership
Ranges from \$500-\$4800

*To learn more about membership contact Paul Erlichman,
416-971-4494 ext. 223 or perlichman@greenroofs.org.*

FEEDBACK

We welcome letters, story ideas, industry news, feedback and comments to the editor. Contact editor@greenroofs.org.

CHANGE OF ADDRESS

circulation@greenroofs.org
T: 416-971-4494 F: 416-971-9844

MISSION

Green Roofs for Healthy Cities' mission is to increase awareness of the economic, social and environmental benefits of green roofs, walls and other forms of living architecture through education, advocacy, professional development and celebrations of excellence.

EDITORIAL ADVISORY BOARD

David Yocca,
Conservation Design Forum

Richard C. Hayden, GRP
American Hydrotech Inc.

Sara Loveland, GRP
Annette Environmental

Sam Ferro,
Turf Diagnostics & Design

Marguerite Wells,
Motherplants

Amy Falder,
New York Green Roofs

MEMBERS OF THE GRHC BOARD

Jeffery Bruce, GRP, chair,
Jeffery L. Bruce & Co. LLC

Peter Lowitt, past chair,
Devens Enterprise Commission

Paul Sheehy, treasurer,
Tremco

Tricia Dunlap,
McGuire Woods LLP

Dr. Hamid Karimi,
Government of DC

Virginia Russell, GRP
University of Cincinnati

Michael Krause,
Kandiyo Consulting, LLC

Oscar Warmerdam,
Sempergreen

David Yocca,
Conservation Design Forum

Matthew Barmore,
Firestone Building Products

Gaelle Berges,
Vegetal i.D. Inc.

Richard Hayden,
American Hydrotech, Inc.





Image provided by: Steven Peck

PUTTING GREEN INFRASTRUCTURE ON THE MAP

It never ceases to amaze me that in a few hours of high-speed travel, one can arrive in a place that is rich with new discovery and diversity and where the cars often travel on the other side of the road. Having recently returned from the 3rd World Green Infrastructure Congress in Nantes, France, I am pleased to report that the European Union is planning to include green infrastructure in the next seven year funding cycle for its member states. This represents new opportunities to put green infrastructure on the map

throughout Europe.

Next year we look forward to our international meeting once again in September 2014 in Sydney, Australia hosted by Green Roofs Australia. At our board meeting in Nantes, the World Green Infrastructure Network selected Hajime Koshimizu, of Meiji University in Tokyo to lead Nagoya, Japan as the co-host city for the 2015 World Congress. Japan is a country that has long perfected the art of intensive green roofing and has been a pioneer in developing many green wall technologies. Over the course

of 2014, watch for our new international column in the *Living Architecture Monitor*, which will feature policy, market insight and design from a number of countries, as we explore more opportunities which lie overseas.

In this issue of the *Living Architecture Monitor*, we explore some of the challenges and opportunities associated with international business development and collaboration (page 4). Manfred Köhler, FBB, and founding chair of the World Green Infrastructure Network (WGIN) shares some of his international insights with us (page 8), along with Dorthe Rømø, a project manager at Grontmij, and one of WGIN's Ambassadors, who provides us with some insight on international policy developments. The emergence of new multi-national green roof and wall companies is a promising sign for our industry because of the potential cross-pollination of business-to-business technology exchanges, and joint market development endeavours. Take a quick look at the integrated wastewater, green roof and wall system developed in Brazil by João Feijó, which won our resiliency design contest (page 13). It is a project designed to address some of the urgent challenges related to water in Brazil with potential lessons for other countries.

In this issue, we also celebrate and acknowledge our many Awards of Excellence winners (page 21). A fantastic range of projects were evaluated by multi-disciplinary judges who chose the best in terms of integrated, multi-functional design for optimal performance. I'm also very pleased to congratulate Dr. Maureen Connelly from the British Columbia Institute

of Technology as our 2013 Research Award winner. Maureen has pioneered green roof and wall research in many areas in British Columbia, including the all too often forgotten realm of sound. The President's Corporate Award goes to Doug York, president of Ewing, who stepped up to support the development of our Integrated Water Management for Sites and Building Series of courses that are essential training for anyone who wants to pursue the goal of net zero water. Doug's commitment to innovation and education is unmatched in the water industry. Scott Potter, director of Nashville Metro Water Services wins the Civic Award of Excellence for his work to integrate green infrastructure policy and incentives into stormwater management in Nashville. We are delighted to begin plans to celebrate and build upon his many successes when we venture to Nashville for the 2014 *CitiesAlive*® in November!

With the advent of modern air travel and telecommunications, the world is now both a very large and very small place. This allows our emerging industry to generate a rich diversity of research and practice, and to realize enormous future potential for good! Please enjoy a safe holiday season wherever your travels take you, and may your projects all fare well.

Sincerely,

Steven W. Peck, GRP
Founder & President, GRHC

PRINCE GEORGE'S COUNTY MANDATES GREEN ROOF PROFESSIONALS

Prince George's County in Maryland passed a sweeping stormwater bill this summer. The county's 'Guidelines for Green Roofs' mandates that contractors with a Green Roof Professional (GRP) designation be selected to work on the project.

FIND OUT MORE

Guidelines for Green Roofs:
<http://goo.gl/Z7b9to>

GRP accreditation program:
<http://goo.gl/0iV0mS>

ONTARIO GREEN INFRASTRUCTURE DESIGN CHARRETTEES FUNDED BY METCALF FOUNDATION

BY: VINCENT JAVET

Green Roofs for Healthy Cities and Landscape Ontario are pleased to announce the launch of a research and community engagement initiative funded by the Metcalf Foundation. This project will develop the capacity of communities throughout Ontario to understand the costs and benefits of investing in living green infrastructure development. The project involves the development of a tool that features detailed descriptions of multiple green infrastructure technologies and the average costs and benefits associated with each. This analysis will then be applied to grey areas in different communities, which will be redesigned with green infrastructure in a one day charrette.

Design charrettes will be held in four cities with carefully selected community stakeholders to create an atmosphere of multi-disciplinary problem solving. These full day events will

draw upon the experience and expertise of selected attendees to re-envision degraded areas within their community with living green infrastructure such as urban forests, parks, green roofs and green walls. The goal of the charrettes will be to provide communities with a vision of what is possible, and the approximate costs and benefits associated with moving forward on implementing that vision. This project should make a unique contribution to the transformation to healthier, more resilient and sustainable communities in Ontario and beyond. We plan to expand the charrette program into the United States in 2014. Go online to www.greeninfrastructurefoundation.org to download the first green infrastructure charrette report.

Vincent Javet is a senior researcher at Green Roofs for Healthy Cities.

Moerings  **sempergreen**[®]

www.sempergreen.com
540-399-5055



Vegetative Blanket
Growing Systems

Green Roofs... On A Roll!



This **OR** This?



It's your choice.

BMP Beauty Meets Performance™

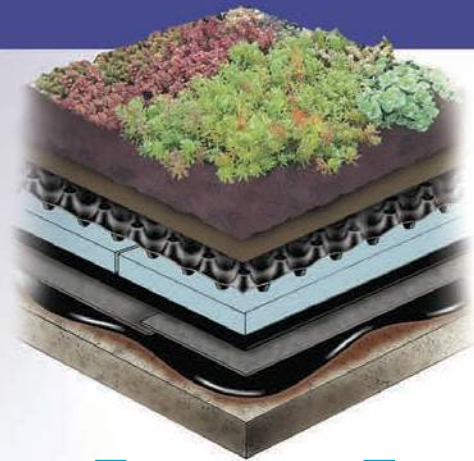
You have many choices for handling water in your stormwater management plan. **So why not make it beautiful as well?** American Hydrotech's Garden Roof® Assembly is setting the standard by which all other green roofs are measured. Hydrotech has the hydrology performance data for its components and assemblies that you can use to develop reliable and predictable BMP elements for your project's stormwater management plan.

To learn more about the **HHT - Hydrotech Hydrology Tool**, please call **800.877.6125** or visit us on-line at **www.hydrotechusa.com**.

Hydrotech's Garden Roof... Where "Beauty Meets Performance"

American Hydrotech, Inc.
303 East Ohio | Chicago, IL 60611 | 800.877.6125 | www.hydrotechusa.com

© 2013 Garden Roof is a registered trademark of American Hydrotech, Inc.



ON THE ROOF WITH...

ON THE ROOF WITH GLOBAL INDUSTRY LEADERS

NORTH AMERICAN LIVING ARCHITECTURE LEADERS DISCUSS INTERNATIONAL DEVELOPMENTS AND THE RISE OF THE MULTINATIONAL GREEN ROOF AND WALL COMPANY

According to Lux Research, green roofs and walls are expected to grow to a \$7.7 billion market by 2017, presenting a huge opportunity for company growth. So, we asked three international companies about their thoughts on this growing, global market.

INTERVIEWED BY: JENNIFER FODEN WILSON

Custom seed mixes.

**Greening the world
one roof at a time.**

www.jelitto.com



Jelitto

PERENNIAL SEEDS

**Production
Breeding
Seed Technology**

USA Office: 125 Chenoweth Ln. · Louisville, KY 40207 · Phone (502) 895-08 07 · Fax (502) 895-39 34 · maryv@jelitto.com · www.jelitto.com
German Headquarters: P. O. Box 1264 · D-29685 Schwarmstedt · Phone 01149-5071-98 29-0 · Fax 01149-50 71-98 29-27 · info@jelitto.com



*Mary Vaananen, manager,
Jelitto Perennial Seeds*

*Edward Jarger, general sales and
marketing manager, American
Hydrotech*

*Oscar Warmerdam, president,
Sempergreen*

WHAT COUNTRIES DO YOU OPERATE IN? WHAT MARKETS DO YOU SEE EXPANDING RAPIDLY?

MARY: We sell to countries all over the world, and our seed production occurs in over 20 countries to maximize seed quality. Asian markets are expanding rapidly, among others.

EDWARD: American Hydrotech has installed vegetated roofs on projects in more than a dozen countries worldwide, with many more in the design phase. Simi-

lar to the US where the adoption of vegetated roofs started in pockets and then gained mainstream acceptance, there is an ever-growing international market. Besides Germany and the UK, who were early adopters, there are many emerging markets. Poland, Chile and Argentina see the benefits of a vegetative roof and are currently experiencing rapid growth.

OSCAR: We currently operate in Europe, China, Singapore and the USA, and soon in Brazil and Mexico.

HOW DOES THE GREEN ROOF BUSINESS IN OTHER COUNTRIES DIFFER FROM NORTH AMERICA?

MARY: Remember, North America was an emerging market not too long ago! With

new opportunities, come new challenges. New markets do need product, but an equally important commodity is knowledge. Our (North American) green roof associations and symposia sprang from this need. Time spent in educating new market players cement relationships that can be lucrative and mutually beneficial, over time.

EDWARD: Specifications for projects internationally have historically been generated by US based architects working on projects overseas. They have a comfort level with Hydrotech's Garden Roof Assembly and have written their specs accordingly. Our agents in these markets are working with the local design communities and growing the

vegetated roof market that way as well.

OSCAR: It's the wild west in each country where these markets start up. Many people try to reinvent systems. We learned that the systems are the same; the plant palette is the only difference. Reliability in supply chains is very difficult, and understanding the sales channels particularly in developing markets is a bit fuzzy, and sometimes corrupt.

OPPOSITE: JELITTO'S REGIONAL SEED MIX GROWING IN ENGLAND
Image provided by: Jelitto Straudensamen GmbH

LEFT: AUSTRALIAN INTERNATIONAL SCHOOL IN HONG KONG. WATERPROOFING AND GARDEN ROOF COMPONENTS SUPPLIED BY AMERICAN HYDROTECH
Image provided by: American Hydrotech

RIGHT: GREEN WALL AT THE HONG KONG INDIGO HOTEL
Image provided by: Sempergreen

Etera SEDUM TILE®
Etera Plugs
Etera Bulk Sedum Cuttings
Large on-demand inventory

Etera.com

ON THE ROOF WITH...



EDWARD JARGER

Image provided by: American Hydratech

WHAT LESSONS CAN WE LEARN FROM THE LIVING ARCHITECTURE MARKET OVERSEAS?

MARY: We are continuing to learn lessons with every interaction and transaction! We have realized that the differing cultural sensibilities produce different rules, by which our clients play. An investigation of, and a real sensitivity to, their inherent cultural customs is key to create successful connections.

industry has been, we think the best is yet to come.

OSCAR: The sky is the limit! China and South America are doing unbelievable great things with green walls. Lessons to learn are that some of these “developing” nations have big wallets to do some really great projects. You need local feet on the floor to help you make it all happen. Every country, every climate is once again a brand new learning curve.

EDWARD: We need to be open to new ideas (and even old ones) wherever they might come from. There is no one way to design or build a vegetative roof. With our 16+ years in the vegetative roof market we have learned much about what works, as well as what does not; and are willing to share this knowledge. But we also know there is much we can learn from what others have done or are trying to do. As exciting as this

Jennifer Foden Wilson is the editor of the Living Architecture Monitor magazine.



OSCAR WARMERDAM

Image provided by: Sempergreen



MARY VAANANEN

Image provided by: Mary Vaananen

FIND OUT MORE

The World Green Infrastructure Network is having its World Green Roof Congress in Sydney, Australia in 2014. See www.worldgreenroof.org for details.



OPTIMIZE PERFORMANCE

With millions of square feet of vegetated roofs specified every year, find out why **Design Professionals, Building Owners and Green Roof Installers** prefer rooflite to optimize their green roof performance at www.rooflitesoil.com/optimize

rooflite[®]

Certified Green Roof Media

www.rooflitesoil.com
(877) 268-0017

Every **green roof** project we do starts with more than 50 years of water management know-how



GREENSCAPES[™]
Green Roof Systems by **CETCO**[®]

Customizable, single-source, green roof solutions from the waterproofing to the plants. To speak to a green roof expert call,

800-527-9948

www.cetco.com

CETCO[®]



LIVING ARCHITECTURE OVERSEAS

INDUSTRY AND POLICY DEVELOPMENT IN THE INTERNATIONAL GREEN ROOF AND WALL MARKET

BY: MANFRED KÖHLER



HOW LARGE IS THE GREEN ROOF AND WALL MARKET/ INDUSTRY OUTSIDE OF NORTH AMERICA? WHAT MARKETS DO YOU SEE EXPANDING RAPIDLY? All around the globe, green roofs and walls are technically possible—and they are now being integrated into

architectural design. In Europe, the big issue at the moment is the standardization of green roof products. The European Organization for Technical Assessment (EOTA) develops and adopts European Assessment Documents (EADs) by using the scientific and technological expertise of its members. The assessment criteria “Kits for Green Roofs” was approved in June 2013, and now allows many green roof products to be disseminated into the European market. Living wall products also need a European label; the fire safety of green façades is one of the final criteria that is under development in Europe.



TOP: LIVING WALL IN NEUBRANDENBURG, GERMANY

MIDDLE: GREEN ROOF IN JAPAN

BOTTOM: INTERNATIONAL LIVING ARCHITECTURE LEADERS GATHER AT THE WORLD CONGRESS IN HANGZHOU, CHINA. FROM LEFT: STEVEN PECK, NORTH AMERICA; JULIAN BRIZ, SPAIN; PATRICK BLANC, FRANCE; MANFRED KÖHLER, GERMANY; FRANCOIS LASALLE, FRANCE; MATT DILLON, AUSTRALIA; TANYA MULLER GARCIA, MEXICO; DORTHE RØMØ, DENMARK

All images provided by: Manfred Köhler

TECTA AMERICA PROVIDES GREEN ROOFS AND ALL YOUR OTHER ENVIRONMENTAL NEEDS!

TECTAES™
ENVIRONMENTAL SOLUTIONS

855-ROOF360 tectaamerica.com

Looking to other markets—Asia is expanding rapidly. Japan, for example, has numerous green roofs; many of them are freely open for the neighborhood to enjoy. High technical standards and good practical work are key requirements for increasing the number of green infrastructure projects in Asia in the future. In 2010, our World Green Roof Congress was well-attended in Mexico City, sponsored by the Mexican Green Roof Association. Delegates from over 13 countries in Central and South America attended—the future is bright for living architecture in Latin America.

WHAT MAJOR GREEN INFRASTRUCTURE POLICIES EXIST OVERSEAS?

In Germany, in the 1980s, about 1/3 of all major cities had incentive regulations. Nowadays, green roofs in many cases are a requirement. We are far away from similar regulation for living walls. For me it seems that China now has an understanding that green infrastructure can help to achieve environmental standards by a low additional investment rate.

HOW DOES THE LIVING ARCHITECTURE BUSINESS IN OTHER COUNTRIES DIFFER FROM NORTH AMERICA?

In the US, at the moment, there seems to be “hype” or an emotional enthusiasm to green a building. In Germany it is a “must do.” Sometimes this “must” means taking the cheapest solutions, which do not always perform best. We in Europe now need a little more from the American exaltation to integrate green infrastructure.

In China and in a lot of other countries, I see an increasing number of young architects who understand the benefits of green buildings—they prefer green infrastructure because they know green on roofs and walls are the last chances to bring greenery directly to the people in cities. Greener cities are not only healthier for people, they have also a better value for marketing purposes.

CAN YOU SPEAK TO SOME OF THE WORLD GREEN INFRASTRUCTURE NETWORK'S (WGIN) NOTABLE PAST AND FUTURE EVENTS AND INITIATIVES?

In 2007 we started this organization. The main idea is to connect and learn from each other and help individuals who are starting their own national green infrastructure associations. Corporate Members are welcome to support this voluntary work. With nearly no budget, we created our own

GREEN POLICY INSPIRATION

BY: DORTHE RØMØ

There is outstanding green roof policy inspiration in Switzerland. In cities like Basel, Zürich and Lucerne, they have regulation for green roofs on buildings to support biodiversity. You will find unbelievable cases of green roofs supporting red-listed species and green roofs with more than 300 blooming orchids at the same time.

Singapore has introduced Skyrise Greenery Incentive Scheme (SGIS) for the period of 2009 – 2015. The scheme will finance up to 50% of installation costs for green roofs and walls. This is supported

by Singapore's “City in the Garden” dream. The target is 50 extra hectares in skyrise greenery before 2030!

Back in 2010, Copenhagen created a green roof policy that mandates green roofs in most new plans. Norway is starting to move ahead these years too. Green roofs are popping up; and a few cities are working with the idea of green roofs in urban planning and design.

FIND OUT MORE

Green roof policy in Copenhagen and around the world: <http://goo.gl/VC0f1t>

Dorthe Rømø is a project manager at Grontmij.

World Congress that helps to bring the ideas of green buildings into many countries. It is interesting: the basics everywhere are the same, but in the details there are so many different things to learn from the local installer, that each meeting has had a big benefit for “old guys in this field.” Next year, our World Congress will be held in Sydney, Australia in September.

FIND OUT MORE

www.eota.eu
www.worldgreenroof.org

Manfred Köbler is the co-founder and president of the World Green Infrastructure Network. He is also a professor at the University of Neubrandenburg in Germany.

CCI GROUP
SCIENCE • ENGINEERING • SOLUTIONS

www.ccigroupinc.ca
Toll Free: 1.888.348.8991

Helping to build and maintain city skylines since 1972

With all the solutions you need to make your project a success, CCI GROUP is your Single Source Engineering Firm.

EDITORIAL REVIEW BOARD

Chair, Dr. Robert Berghage
(*Penn State University*)

Dr. Reid Coffman
(*Kent State University*)

Dr. Nigel Dunnett
(*University of Sheffield*)

Dr. Brad Bass
(*Environment Canada*)

Dr. Sabina Shaikh
(*University of Chicago*)

Dr. Bill Retzlaff
(*Southern Illinois University Edwardsville*)

Barry Lehrman, MArch/MLA
(*California State Polytechnic
University, Pomona*)

Dr. Maureen Connelly
(*British Columbia Institute of Technology*)

Dr. Youbin Zheng
(*University of Guelph*)

Dr. David Tilley
(*University of Maryland*)

Thomas O'Connor, MSE
(*US Environmental Protection Agency*)

Dr. Bradley Rowe
(*Michigan State University*)

Dr. Richard Sutton
(*University of Nebraska-Lincoln*)

Bruce Dvorak, MLA
(*Texas A&M University*)

Dr. Jennifer Bousset
(*Iowa State University & Colorado State
University*)

Virginia Russell, MLA
(*University of Cincinnati*)

For questions about joining the editorial review board, submitting manuscripts or policies and procedures, contact editor, Jennifer Foden Wilson, jfodenwilson@greenroofs.org or 416-971-4494 ext. 231.

JOURNAL

OF LIVING ARCHITECTURE

The Journal of Living Architecture (JOLA) is the official, peer-reviewed journal of Green Roofs for Healthy Cities, an interdisciplinary trade and professional organization, linking research, design and policy with the industry; and is dedicated to advancing the methods and practices of creating living architecture for healthier cities. The JOLA's mission is to expand and update the research and knowledge base for living architecture and allied professionals. In addition, the JOLA serves as a forum for emerging and contemporary issues affecting living architecture.

The JOLA is written, reviewed, and edited by living architecture research professionals, sharing with their colleagues: successful educational applications, original research findings, scholarly opinions, educational resources and challenges on issues of critical importance to living architecture professionals and educators.

The JOLA is published exclusively on the *Living Architecture Monitor* magazine website. The magazine will publish the abstract of each published JOLA manuscript, with a link to the full paper online.

ISSUE NO. 1

FEATURE

**PLANT SPECIES SURVIVAL ON THREE
WATER CONSERVING GREEN ROOFS IN A
HOT HUMID SUBTROPICAL CLIMATE**
B. Dvorak, B. Byerley and A. Volder

The quantification of ecological services from green roofs in Texas is emergent and proving advantageous. Identification of candidate plant species for green roofs in Texas and similar hot and humid subtropical climates is limited. Three extensive

green roof systems and research sites in Texas employed different water conserving techniques ranging from no irrigation, to sparse application during dry and drought periods, to frequent watering with harvested rainwater. Thirty-four candidate species were identified for hot and humid climates from among the three sites. These findings help to establish a reference point for future investigations of green roof plant survivability.

FERTILITY MANAGEMENT FOR TOMATO PRODUCTION ON AN EXTENSIVE GREEN ROOF

N. A. Ouellette, S. A. Walters and K. S. Midden

Green roofs offer an alternative growing space to provide fresh vegetable products to urban markets. The soil component is an important aspect of efficient green roof production systems and adequate fertility levels are often lacking in media that are required to maximize plant growth. This research project evaluated four fertilizer treatments on 'Bush Champion II' tomato (*Solanum lycopersicum*) growth and yield in a 7.62 cm green roof production system: 1) vermicompost tea, 2) Miracle-Gro fertilizer, 3) Organic Miracle-Gro fertilizer, and 4) no fertilizer. Treatments were applied weekly and ripe tomato fruit was harvested from June to August. Results indicated that Miracle-Gro® provided the highest total tomato fruit yield, which was 30% and 50% more in

2011 and 2012, respectively, compared to the next highest treatment - Organic Miracle-Gro®. Plant vigor, chlorophyll content, and tomato yields indicated that tomatoes can be successfully grown in a 7.62 cm green roof medium.

SEEDING GREEN ROOFS WITH NATIVE GRASSES

R. Sutton

During six years of native grass establishment and growth on four green roofs, we sought to understand appropriate seeding seasons and spacing, the amount of time to reach the industry 80% coverage threshold (FLL 2008), the seed yield projections for volunteer plant infill. We also produced and tested methods for successfully and inexpensively seeding and determined "as needed" irrigation protocols. The suite of techniques examined improves and enhances the use, establishment, and management of native grasses on green roofs and reduces green roof costs.

COMMENTARY

RETHINKING EXTENSIVE GREEN ROOFS TO LESSEN EMPHASIS ON ABOVE-GROUND BIOMASS

R. Sutton

In the future, most green roof applications will not be highly visible, yet these roofs will still provide the benefits of heat island reduction, stormwater control and biodiversity for hard-surfaced cities. However, human bias in wanting more biomass and visible blooms leads green roof horticulturalists and their approach of maximizing those aspects down a slippery slope that, in turn, leads to increased hours of labor, over-watering and fertilizing and specifying too many cultivars.

FIND OUT MORE

Read the entire papers here:
<http://goo.gl/o1bk54>

Designing for tomorrow

HALIFAX SEAPORT FARMERS' MARKET (Photo : James Ingram)

Sopranature
20 years of green thinking

High performance SOPRANATURE green roof systems by SOPREMA live up to your expectations. In addition to the diversity of SOPRANATURE systems, architects, builders and building managers can count on the SOPREMA professional team for recommendations concerning the perfect design for their projects. Consider SOPRANATURE for your next customized green roof.

www.sopranature.ca



RESILIENCY AND LIVING ARCHITECTURE

THE GREAT COMMUNITY RESILIENCY PROJECT CONTEST—TOP PICKS AND WINNER!

We asked you to submit your ideas of how living architecture can create more resilient communities in face of climate change, resource shortages, natural disasters and environment degradation. And did you ever deliver! Here are our top picks. Congratulations to João Manuel Linck Feijó, who won a free delegate pass to *CitiesAlive* in San Francisco for his video submission.

BRIEN SPIER, WESTFIELD, MA, USA



FRED M. HUNTER, SANTA BARBARA, CA, USA

Gray water and black water from all residential, commercial, and public sources should be processed on site by architecturally integrated anaerobic bio digestion systems to generate and capture methane for cooking and power. Effluents from bio digestion should continue on to integrated, highly localized bio filtration and plant production systems, purified water being the end product. Micro localizing treatment and capture of this resource insures maximum resiliency in the face of disruptions to municipal infrastructures.

BRADLEY KLEIN, CARTERVILLE, IL, USA

In *How Children Succeed*, Paul Tough argues that non-cognitive skills of curiosity, perseverance, conscientiousness, optimism, and self-control contribute more to a child's success than traditional schooling. To make the next generation more resilient, living architecture tutoring centers modeled after 826 National's storefronts such as the Bigfoot Research Institute and the Brooklyn Superhero Supply Co. can provide one-on-one attention, field trips, after-school workshops, and more, with an emphasis on understanding nature and the built environment.

JENNY HILL, TORONTO, ON, CANADA



an EXQUISITELY SIMPLE GREEN ROOF SYSTEM

MODULAR, ECOLOGICALLY RESPONSIBLE, FLEXIBLE

NO WASTE, NO PLASTIC



sodpodmod™

Patent Pending
sodpodmod.com



WATCH THE WINNING SUBMISSION AT
<http://goo.gl/xWwoJt>.



roofmeadow.com

Roofmeadow

public spaces | blue-green roofs | rooftop farms | compliance green roofs

INDUSTRY RESEARCH COLLECTION

WHAT GREEN ROOF AND WALL RESEARCH WAS PUBLISHED AUGUST TO OCTOBER 2013?

Compiled by: Victoria Fratin

Chan, A.L.S. & Chow, T.T. (2013). Energy and economic performance of green roof system under future climatic conditions in Hong Kong. *Energy and Buildings*, 64, 182-198. <http://goo.gl/H2fkqc>

Fernandez-Cañero, R., Emils-son, T., Fernandez-Barba, C. & Machuca, M.A.H. (2013). Green roof systems: A study of public attitudes and preferences in southern Spain. *Journal of Environmental Management*, 128, 106-115. <http://goo.gl/LRwn1j>

Jungels, J., Rakow, D.A., Allred, S.B. & Skelly, S.M. (2013). Attitudes and aesthetic reactions toward green roofs in the Northeastern United States. *Landscape and Urban Planning*,

117, 13-21. <http://goo.gl/P5P2s4>

Kolokotsa, D., Santamouris, M. & Zerefos, S.C. (2013). Green and cool roofs' urban heat island mitigation potential in European climates for office buildings under free floating conditions. *Solar Energy*, 95, 118-130. <http://goo.gl/ey75U0>

Lee, J.Y., Moon, H.J., Kim, T.I., Kim, H.W. & Han, M.Y. (2013). Quantitative analysis on the urban flood mitigation effect by the extensive green roof system. *Environmental Pollution*, 181, 257-261. <http://goo.gl/2wQVbE>

Madre, F., Vergnes, A., Machon, N. & Clergeau, P. (2013). A comparison of 3 types of

green roof as habitats for arthropods. *Ecological Engineering*, 57, 109-117. <http://goo.gl/2AROI0>

Nagase, A., Dunnett, N. & Choi, M. (2013). Investigation of weed phenology in an establishing semi-extensive green roof. *Ecological Engineering*, 58, 156-164. <http://goo.gl/SZc3c6>

Olivieri, F., Di Perna, C., D'Orazio, M., Olivieri, L. & Neila, J. (2013). Experimental measurements and numerical model for the summer performance assessment of extensive green roofs in a Mediterranean coastal climate. *Energy and Buildings*, 63, 1-14. <http://goo.gl/1DQ1fd>

Rumble, H. & Gange, A.C.

(2013). Soil microarthropod community dynamics in extensive green roofs. *Ecological Engineering*, 57, 197-204. <http://goo.gl/IUm54a>

Savi, T., Andri, S. & Nardini, A. (2013). Impact of different green roof layering on plant water status and drought survival. *Ecological Engineering*, 57, 188-196. <http://goo.gl/50XpF9>

FIND OUT MORE

Interested in green roof and wall research? Green Roofs for Healthy Cities has launched the *Journal of Living Architecture*: <http://goo.gl/NMuxS>.



Laboratory Testing for Green Roofs

Growing Media Fabrics Drainage Aggregates
Tray Systems Filters Geocomposite Layers

Industry leading research and development

Testing to ASTM & FLL standards

Fast turnaround, accurate results, expert advice

Contact us today for all of your green roof and landscape testing needs.

TURF DIAGNOSTICS & DESIGN

www.turfdiag.com

Phone: 913-723-3700

Email: turfdiag@turfdiag.com



Image provided by: Caroline Tomlin



SUN, SURF AND GREEN ROOFS

CAROLINE TOMLIN, GRP, LEED AP, BLA

POSITION/COMPANY:
Landscape Architect, Talma Mill Studios

LOCATION: Barbados

WHEN DID YOU BECOME A GRP (GREEN ROOF PROFESSIONAL)? 2010.

WERE YOUR CAREER AMBITIONS ALWAYS ENVIRONMENTALLY DRIVEN?
Yes. I have always loved nature, as well as art, and had wanted a career as a landscape architect from a young age. I find that the most interesting and successful designs are multi-dimensional and

integrate some sort of environmental benefit.

WHAT ARE SOME OF THE PROJECTS YOU'VE WORKED ON SINCE BECOMING A GRP? While working with Talma Mill Studios in Barbados, I have been involved in green roof projects for the Church Village Redevelopment in Bridgetown and two private residential projects (one in Trinidad and one in Barbados). Before moving back home to Barbados, I worked with Scott Torrance Landscape Architect Inc. in Toronto on several green roof

projects, including the award-winning Native Child and Family Services building and the ESRI Canada head office.

HOW HAS YOUR EXPERIENCE AS A GRP IMPACTED YOUR BUSINESS OR WORK?
While I was working in Toronto, yes, it was definitely an advantage, not only in terms of my resume, but in terms of confidence. After moving home to Barbados, where green roofs are not common, the designation has not proven as pertinent, but I do believe that this will change.

WHAT IS YOUR VISION FOR THE LIVING ARCHITECTURE INDUSTRY THROUGHOUT THE NEXT DECADE? In Barbados, green roofs will provide a method of gaining affordable usable space. In an island that is 166 square miles and with a population of 287,700—land is expensive. Furthermore, Barbados' electricity is derived from imported fuel which makes electricity also expensive; typically more than double the rates in North America. Combining these two elements with a climate that fosters plant growth leaves Barbados and the Caribbean especially well-positioned to gain from the benefits that green roofs can offer.

FIND OUT MORE

To find a GRP, visit: <http://goo.gl/AZ2uZh>



Northeast Green Roof Experts

REcover
GREEN ROOFS, LLC
DESIGN BUILD MAINTAIN

9 Olive Square
Somerville, MA 02143
office: 857.209.4464
fax: 617.207.4341

info@recovergreenroofs.com
www.recovergreenroofs.com

Call us today
for a free consultation



Private Residence
Winchester, MA
Extensive Green Roof

1,300 sq. ft



Whole Foods Market
Lynnfield, MA
Rooftop Farm

17,000 sq. ft



Novartis Research Facility
Cambridge, MA
Outdoor Roofdeck

750 sq. ft



Natick High School
Natick, MA
Extensive Green Roof

7,000 sq. ft

INTERNATIONAL GREEN WALL PLANT INSPIRATION

FLAX LILY AND KIWI: TWO LESSER-KNOWN GREEN WALL SPECIES TO ADD TO YOUR PLANT PALETTE

BY: MARGUERITE WELLS

The horticultural trade has been an international business for a very long time. People have been on plant-collecting missions for centuries, sending home seeds from expeditions around the globe. This continues to this day, with new selections and varieties traded across the world. Plants for sale at a retail nursery in Kansas might have originated as cuttings taken from a flower farm in Kenya or Brazil, sent to a US grower and sold to a homeowner in a residential suburb.

Green walls (living and green façades) in particular offer such a specific set of unique requirements that designers must choose plants based on those limitations, plus the aesthetic goal, rather than focusing solely on what is native to an area. For projects around the world, indoor green walls or biowalls consist of low-light tropical foliage plants. For outdoor shady walls, ferns, liriopes, and other small leafy groundcovers like Ajuga and Stachys are common for living walls. For green façades, the

type of trellis, sun aspect, winter climate and height of trellis all affect plant choice. A trellis that is only 12 feet high invites different plants than a fifty foot climb would. Ideally all climbers would be evergreen to screen the building year round, even in temperate climates, but the list of evergreen climbers is quite short.

So I present to you two lesser-known green wall species to add to your plant palette.

FLAX LILY *DIANELLA SP.*
(LIVING WALLS)

This is a little-known genus, of which the only available variety in North America is a variegated selection of *Dianella tasmanica*. Native to Australia, it is hardy to Zones 8 and warmer, or might be suitable in some indoor applications where lighting levels are low, since it likes partial to full shade. Its variegated leaves and elegant flower stalks with blue flowers make this species a new design element among otherwise familiar tropical species. Up to 3' tall and 1' wide in spread, the bushy, strap-like leaves cover a



- Green roof growing media for roofs, tray systems and nurseries.
- Developed and introduced propriety Laminar Flow Blending method to preserve physical integrity of mix and reduce "shrinkage."
- 14 years experience blending, handling and shipping green roof media.
- Leaders in soil innovation: Ask us about our work developing a lower carbon footprint green roof media.



Healthy Soil.

Happy Earth.



Stancills Inc.
Environmental Soil Blending
www.stancills.com/skygarden

lot of area. There are 25 species of the genus *Dianella*, native to various parts of Australasia. Generally tough and shade-loving, they need little care other than occasional removal of a dead leaf here or there. They grow easily from seed, so there is good possibility of increasing the number of species in common circulation since seed is much easier to ship internationally than live plants.

**KIWI *ACTINIDIA SP.*
(GREEN FAÇADES)**

We're all familiar with the kiwifruit of the grocery store, *Actinidia deliciosa*. A sturdy vine that is hardy to subtropical and maritime climates, it will climb to a height of 10-25' at maturity, and bear 100 lbs of fruit annually, if water and pollination are provided. Lesser-known, however are the hardy members of the genus, *A. arguta* and *A. kolomikta*, which are hardy to -25°F and -40°F respectively. *A. arguta* are even more vigorous vines than *deliciosa*, reaching a height of up to 50' tall, and producing crops of grape-size, smooth skinned fruit. *A. kolomikta*, native to Russia, have smaller vines and could be considered for more confined locations. The hardy kiwi's fruit is similar to

TOP: KIWI
Image provided by: Badly Drawn Dad, Flickr
BOTTOM: FLAX LILY
Image provided by: eyeweel, Flickr

the commercial kind, except it is as though all the flavor of the large fruit is concentrated into the grape-size bite. In all cases, *Actinidia* species have male and female plants. The males are less vigorous than the females, and are required in a ratio of 1:8 for pollination of flowers. Native to Asia, these species are cultivated around the world for their delicious and nutritious fruit, and attractive vines well-suited to arbors and trellises. A twining vine, it requires a strong trellis to support its mature weight, but the plant will not damage the siding of the building on which it grows. It can be cultivated from seed or cuttings at a nursery, but for landscape installation it is generally planted from 1 gallon pots or larger. It will take 2 to 5 years to fruit. Plants live up to 50 years. There are many cultivars of all the species, so choose carefully for a site's climate, sun, and height requirements. Hardy kiwis are easily available from many nurseries in North America.

Marguerite Wells is the owner of Motherplants.



NEED NATIVES?
SEDUM PLUGS OR CUTTINGS?
MATS, TILES OR MODULES?

CERTIFIED WOMEN-OWNED
HIGH QUALITY
FAST SERVICE

MOTHERPLANTS

WWW.MOTHERPLANTS.NET

THE FUTURE OF LEAK TESTING?

ELECTRIC FIELD VECTOR MAPPING TECHNOLOGY BRINGS WATERPROOF TESTING INTO THE 21ST CENTURY

BY: MATTHEW DURRETT

Since the inception of waterproofing, the industry has needed post-installation quality control (QC). With the advent of modern technology, a system has been developed for high-performance waterproofing systems testing. Known as electric field vector mapping (EFVM), the testing was developed by the International Leak Detection-Group (ILD) of Germany in 1996. Since then, this technology has quickly become the standard for QC testing on new systems, as well as a valuable tool for leak investigation on existing systems.

THE TESTING PROCEDURE

To explain the testing procedure in operation, we need to first understand some of the inherent properties of most waterproofing systems. In today's waterproofing industry, several different types of waterproofing systems exist. They range from liquids (hot or cold), coatings and self-adhering or loose-laid sheet goods. The testing of all of these membranes is possible as they're all isolators of electricity, which is a requirement for an EFVM test.

The EFVM testing procedure begins by placing a

conductor wire around the perimeter of the waterproofing area. Then a field plate (area the field is generated in above the membrane) is created using low-voltage electricity on the surface of the waterproofing membrane. Because the membrane acts as an isolator between the field plate and the structural substrate below, the EFVM test is able to contain and analyze the field plate for electrical movement. Once movement is detected, it can be tracked to find the location of the breach with pinpoint accuracy.

Unlike a flood test, the EFVM testing procedure only requires enough water to wet the membrane. A standard garden hose is sufficient for handling the wetting procedure. You don't need to plug drains or construct costly and complex dams. As a result, this testing is not only more accurate but also much quicker in obtaining QC results. A technician can generally complete testing on most membranes at a rate of 12,000 to 15,000 square feet per day.

EFVM VS. FLOOD TESTING

While you will always find those who like to hang on to the past, those individuals can't deny that the technology of our

WE SEE RED TO SAVE YOU GREEN

260,000 SQ. FT.



Vancouver Convention Centre
BC, Canada

114,000 SQ. FT.



Target Center, MN
United States



175,000 SQ. FT.



Canadian War Museum
ON, Canada

180,000 SQ. FT.



FedEx, Chicago O'Hare Airport
IL, United States

International Leak Detection

150 Million sq. ft. of Green Roofs Tested... and Counting

When it comes to testing green roofs worldwide, ILD® sets the standard.

Call us to find out more

1-866-282-5325

www.leak-detection.com



“YOU CAN ENSURE INSTALLATION IS CORRECT AND LEAK-FREE WITHOUT A FLOOD TEST.”

growing industry is expanding at an exponential rate. At one time, the industry considered the flood test to be the standard method for architects and owners to verify whether crews had installed materials according to the manufacturer’s specifica-

tions and within good practice of industry standards. Today, however, you can ensure installation is correct and leak-free without a flood test.

A recent university project in Cincinnati proves this point. The consultant on the project

specified both a flood test and EFVM testing prior to green roof overburden installation. The 48-hour flood test was deemed successful due to no water within the occupied space below. The EFVM testing, however, showed more than 50 breaches (defects, openings, cuts) within the membrane. Most of the breaches were due to mechanical damage from screws and abrasions.

Upon the testing completion, technicians provided the contractor with pinpoint locations of the areas needing repair. Unlike the flood test, which may only show water in the space below, EFVM testing identified the exact locations.

INTO THE FUTURE

As construction technology and design moves into the

ELECTRONIC FIELD VECTOR MAPPING IN ACTION
Images provided by: International Leak Detection

future, an increasing need will exist for testing and verification of waterproofing/roofing assemblies. With green roofs, plaza decks and bridge decks becoming ever more complex, we will always need a membrane that is up to the task. Testing methods of yesteryear will not be up to the challenge that future designs will require which is why EFVM testing ensures projects start off on the right foot.

Matthew Durrett is the national sales manager of International Leak Detection in Des Plaines, Illinois (mdurrett@leak-detection.com).



LiveWall[®]
Vertical Gardens
That WORK
(877) 554-4065
sales@livewall.com

Easy to...

Design

Install

Maintain

LiveRoof[®]
The PROVEN Hybrid
Green Roof System
(800) 875-1392
sales@liveroof.com





The industry standard for greenroof edging.



Photo: The Blue Building • New York, NY

Connect with Permaloc:



Permaloc GeoEdge aluminum edging restraints have become the standard on which architects, contractors, and greenroof system manufacturers depend for greenroofs.

With clean architectural details, dozens of height and base combinations, and the patented TRUTRAC base system, allowing each piece to form both straights and curves, GeoEdge has no equal.

Use the best on your next greenroof project - Permaloc GeoEdge!



www.permaloc.com

800.356.9660

JUDGES TABLE

We would like to thank the following judges who generously donated their time and expertise, and without whom this award program would not be possible.

JEFFREY BRUCE, GRP, FASLA,
*principal, Jeffrey L. Bruce &
Company LLC and GRHC
Chair**

MONICA KUHN, GRP, B.E.S., B.ARCH., O.A.A.,
Monica E. Kuhn Architect Inc.

DAVID J. YOCCA, RLA, ASLA, AICP, LEED AP,
*principal landscape architect/planner,
Conservation Design Forum
and Design Professional, GRHC
Board*

TERRY GUEN, FASLA,
*principal of Terry Guen Design
Associates**

CHRISTOPHER LYON, MBA
president of Tournesol Siteworks

MARGUERITE WELLS,
owner of Motherplants Ltd.

MICHAEL KRAUSE,
*president of Kandiyohi
Development Partners*

**Previous award winner*

WRITTEN AND COMPILED BY:
PAUL ERLICHMAN

Paul Erlichman is the membership coordinator at Green Roofs for Healthy Cities

2013 AWARDS OF EXCELLENCE WINNERS

AT THE I1TH ANNUAL *CITIESALIVE* IN SAN FRANCISCO ON OCTOBER 25TH, GREEN ROOFS FOR HEALTHY CITIES CELEBRATED THE MOST OUTSTANDING EXAMPLES IN GREEN ROOF AND WALL DESIGN, POLICY AND RESEARCH. THE AWARD-WINNING DESIGN PROJECTS AGAIN THIS YEAR SHOWCASE THE IDEA THAT AESTHETICS AND BUILDING PERFORMANCE ARE BY NO MEANS MUTUALLY EXCLUSIVE.

PLEASE EXPLORE THE PROJECTS IN THE PAGES THAT FOLLOW AND LEARN HOW THEY ARE PROVIDING LEARNING OPPORTUNITIES, CREATING BETTER WORK ENVIRONMENTS AND TRANSFORMING THE SUBURBAN HOME. AS WITH EVERY GROUP OF AWARD OF EXCELLENCE WINNERS, THESE PROJECTS PROVIDE THE COMMON BENEFITS OF GREEN ROOF AND WALLS (SUCH AS ENERGY SAVINGS AND STORMWATER MANAGEMENT) WHILE INCLUDING UNIQUE ELEMENTS THAT MAKE THE PROJECT STAND OUT FROM THE CROWD. CONGRATULATIONS TO THE WINNERS FOR YOUR INNOVATION AND DEDICATION.

CATEGORY:
**INTENSIVE
INSTITUTIONAL**

TEAM

PROJECT:

*Vancouver Island University,
Cowichan Campus, Duncan, BC,
50,000 square foot green roof*

LANDSCAPE ARCHITECT:

*Sharp & Diamond Landscape
Architecture Inc. (Award Winner)*

WATERPROOFING MEMBRANE:

Soprema

CIVIL ENGINEER:

Herold Engineering

GREEN ROOF CONTRACTOR:

Paradise Cityscape

ARCHITECT:

Garyali Architects

CONSTRUCTION MANAGER:

Yellowridge Construction

LANDSCAPE AND GREEN ROOF MAINTENANCE:

Island Irrigation

MECHANICAL ENGINEER:

AME Consulting Group

LEED/SUSTAINABILITY:

Advicas

IMAGE PROVIDED BY: SHARP & DIAMOND
LANDSCAPE ARCHITECTURE INC.



A PLACE TO LEARN AND GROW

Vancouver Island University's new Cowichan Campus is a place for celebration and learning. Located approximately 38 miles northwest of Victoria, the university is one of the largest employers in the Cowichan Valley; and 17 percent of students belong to the Cowichan Tribes. Through consultation with the Cowichan Tribes, First Nations' values and culture are expressed in the open building format with cultural artifacts, the significant use of wood and ethnobotanical gardens on the rooftop. The connection to the greater landscape of Cowichan Valley is reflected in extensive wet grasslands, large bigleaf maple trees and multiple green roofs that recreate meadow, forest and coastal bluff ecosystems. The site is an extension of the Somenos Marsh, which is comprised of large meadow areas. Plants were chosen from the local nursery to reflect the surrounding landscape; and the roof was planted with over 44,000 native coastal meadow sedums, grasses and wildflowers.

The building features 6 types of roof systems on 3 levels. Level 3 is fully accessible by students, staff and visitors; and provides quiet spaces to gather

"VANCOUVER ISLAND UNIVERSITY GIVES CREDIT TO THE DESIGN OF THE COWICHAN CAMPUS AS BEING KEY TO OUR SUCCESS IN RECRUITING AND RETAINING STUDENTS, FACULTY AND STAFF."

DREW TAYLOR, PROJECT MANAGER, FACILITIES SERVICES AND CAMPUS MANAGEMENT, VIU

and areas for hands-on learning. Level 1 is on grade and accessible; and Level 2 locations are inaccessible. Green roofs cover 88 percent of the campus buildings, with sections of intensive green roof (with trees, shrubs, climbers and groundcovers), extensive green roof (with native coastal meadow sedums, grasses and wildflowers), extensive sloping roofs with additional slope / water retention to reflect the hillsides of the Cowichan Valley, pre-vegetated sedum mats and a blue roof (which provides additional stormwater retention). The project has been awarded LEED® Gold Certification.

On average, 90 percent of the annual rainwater is retained on the roof in 8 cisterns, which

are partially buried in the ground next to the building. Runoff is also retained onsite through permeable surfaces under the parking lot and the entrance plaza, rain gardens and wet meadows.

Students and staff have created a rooftop garden area and have planted salad greens, herbs and climbing beans—this is part of the Employability Skills course, which is taken by 12 students with disabilities. The course results were very positive. By integrating green roofs and other forms of green infrastructure throughout the project, it is clear that the new Cowichan Campus is an exceptional place to gather, learn and grow.



2013 AWARDS
OF EXCELLENCE

CATEGORY:
**EXTENSIVE
INDUSTRIAL/
COMMERCIAL**

WASTEWATER KEEPS LIVING ROOF GREEN

The Ellis Creek Water Recycling Facility in Petaluma, California utilizes its operation and maintenance buildings to demonstrate the sustainable aspects of building integrated vegetation. The planting scheme of the living roofscape took advantage of the roof being visible from the surrounding roadways and landscape. The plants include 13 species of groundcover succulents, such as Summer Glory, Purpurteppich and John Creech. In addition, the facility is set along the banks of the Petaluma River and is adjacent to natural wetlands and constructed wetlands that are used to increase the quality of the treated wastewater before releasing it into the river. As a result of its location, the area is deemed as an avian habitat zone and the vegetative roof was designed in part to support the local and migratory bird populations of the area. The roof has been successful in this regard, as numerous bird species such as killdeer have used the roof for nesting.

“WASTE NOT, WANT NOT.’ USING RECLAIMED WATER TO NURTURE THE LIVING ROOF IS TESTIMONY TO THIS PROVERB.”

KEVIN FALKERSON, FOUNDER AND PRINCIPAL, SYMBIOS

The roofs are irrigated directly by utilizing the tertiary treated wastewater from the facility’s operations, which is held in a holding pond situated adjacent to the buildings. The treated wastewater allows the vegetation to be irrigated without the use of any potable water. Vines have been planted to green up the façade of the buildings. Stormwater overflow from the living roofs drain into ground level rain garden swales adjacent to the buildings for a net-zero stormwater runoff system.

The green roof is being used to support a native bee study research program (by Scott MacIvor, York University in Toronto) which is investigating the ecological importance of living roofs in relation to native bee populations. Weather data

is also collected every month at the Department of Water Resources’ weather station. Water samples are collected, tested and recorded during the irrigation season.

In the western United States where seasonal drought is an annual event, this green roof project demonstrates the appropriate use of this reclaimed water resource. During the annual dry season (summer/autumn), the treated water is introduced into the City of Petaluma’s water treatment plant and used for irrigation of agricultural lands, two golf courses, vineyards and the treatment facility’s two green roofs. The facility currently processes over 700 million gallons of wastewater per year, which could theoretically support millions of square feet of green roofs.

TEAM

PROJECT:

Ellis Creek Water Recycling Facility, Petaluma, CA, 12,790 square foot green roof

GREEN ROOF DESIGNER, INSTALLER AND MAINTENANCE PROVIDER:

SYMBIOS Ecotecture (Award Winner)

ARCHITECT:

Burks Loma

ENGINEER:

Ingraham De Jesse

PLANT SUPPLIER:

Emory Knoll Farms

DRAINAGE SYSTEM AND WATERPROOFING:

Tremco

GROWING MEDIA BASE LAYER:

Rooflite

IRRIGATION:

Hunter Industries

IMAGE PROVIDED BY: SYMBIOS ECOTECTURE

CATEGORY:
**SMALL-SCALE
RESIDENTIAL**

TEAM

PROJECT:

*Skyhigh Residence, Fairfax, CA,
565 square foot green roof*

**GREEN ROOF DESIGNER, INSTALLER AND
MAINTENANCE PROVIDER:**

*SYMBIOS Ecotecture
(Award Winner)*

STRUCTURAL ENGINEER:

D & D Engineers

PLANT SUPPLIER:

Emerisa Gardens

WATER RETENTION & DRAINAGE:

Colbond

IRRIGATION:

Hunter Industries

WATERPROOFING MEMBRANE:

Neptune Coatings



A CALIFORNIA DREAM OVER-LOOKING THE MOUNTAINS

The Skyhigh Residence is built on a steep hillside that affords the inhabitants beautiful views of the surrounding wild lands and distant mountains. The main living spaces of the house are located on the upper floor of the residence. The second floor balcony and interior dining room are directly adjacent to the green roof. The green roof provides a direct connection to biological life; and the landscape of the roof has a design aesthetic that reflects a naturalistic and artistic expression.

The owners can access the outdoors via a wrap-around balcony that adjoins and overlooks the green roof of the lower levels of the house. In order to maximize the effect of a ‘garden in the sky,’ the green roof was developed to look much like a ground-based landscape.

To accentuate this point, the roof was designed with a dry creek drainage channel with lightweight large stones and boulders. The drainage channel was conceived to be an aesthetic element, but it also doubles as a maintenance path and elimi-

“THE LIVING ROOF SERVES AS A BIOLOGICAL BRIDGE BETWEEN THE BUILT ENVIRONMENT AND RESTORING LOST HABITAT TO BIRDS, BEES, POLLINATORS, FROGS AND SO MUCH MORE.”

KERRIE LEE COLE, GRP, SYMBIOS

nates the need for perimeter ballast strips. Also, the green roof covers a wing of the residence that contains several bedrooms, so it provides substantial building thermal performance benefits.

The green roof is irrigated using rainwater harvested from the upper metal roofs of the residence. An old pool on the property was converted into a 20,000 gallon cistern that stores water during the winter months and supports the roof garden

during the dry summer months.

A biodiverse plant palette with a mix of perennials, succulents and natives was chosen for its benefit to local pollinators. Over twenty plant species were integrated and their bloom times were staggered so pollinators can forage throughout the year. A multi-year maintenance contact is in effect to keep the roof in tip-top shape, and looking beautiful for years to come.



2013 AWARDS
OF EXCELLENCE

CATEGORY:
**EXTENSIVE
INSTITUTIONAL**

MORE THAN ARTISTIC EXPRESSION

The Kauffman Performing Arts Center in downtown Kansas City, MO, is one of the most technically and architecturally advanced performing arts centers in the nation, is built in a landscape setting of equal acclaim. The 285,000 square foot Arts Center includes two separate halls, both housed within a dramatic overarching shell featuring a glass roof and glass walls fronting a green roof and city skyline. The Arts District Garage is a 1,000 car underground parking structure attached to the new Kauffman Performing Arts Center. The green roof atop both structures is designed as a 4.4 acre high performance open space park with the distinction of being the first permitted green roof stormwater detention facility in the State of Missouri—and the largest.

The drainage system design was comprised of a variety of unique solutions. Three independent drainage systems optimize stormwater management by removing excess water with both active and passive harvesting for

“THE SUCCESS OF INNOVATIVE PROJECTS REQUIRES EXCEPTIONAL COLLABORATION, COMMUNICATION AND AN UNWAVERING BELIEF IN THE SOUNDNESS OF THE SOLUTION. WE LIVE FOR THESE TYPES OF TECHNICAL CHALLENGES AND THIS PROJECT DELIVERED IT ALL.”

JEFFREY BRUCE, PRINCIPAL, JEFFREY L. BRUCE & COMPANY LLC

landscape use. The growing media was designed to accept and store surface water for use by the landscape, thereby reducing water needs. When the growing media reaches material field capacity, the system releases excess water into the thin composite drainage boards, and using the slope of the deck, gravity fed water finds its way into the roof drains which are routed to an underground cistern for capture. There, it is recycled as irrigation water for the vegetated roof and site landscaping, saving the city \$56,000 in water costs per year and supplying over 84 percent of the annual 1.2 million gallon irrigation demand.

The green roof is at grade on the north side and two stories above grade on the south. The six and eight-inch deep growing

media supports groundcovers like Switchgrass (the seed of which provides food for songbirds) and Monkeygrass. The green roof also includes trees such as red oaks and Colorado spruce. Over 95 percent of the landscape materials and furnishings were sourced within 20 miles of the site.

The green roof, is part of the public tours program which informs thousands each year about the design and history of the facility. The City of Kansas City and the Missouri Department of Conservation also use the green roof as a case study for public stormwater permitting. The landscape will function as a community center and will give neighbors and wall provide urban green spaces while integrating ecological benefit and function in multiple ways.

TEAM

PROJECT:

Kauffman Performing Arts Center & District Garage, Kansas City, MO, 193,000 square foot green roof

LANDSCAPE ARCHITECT:

*Jeffrey L. Bruce & Company LLC
(Award Winner)*

DESIGN LANDSCAPE ARCHITECT:

Reed-Hilderbrand Assoc.

PARKING GARAGE CONSULTANT:

Carl Walker, Inc.

GARAGE GENERAL CONTRACTOR:

Walton Construction

PERFORMING ARTS CENTER (PAC) DESIGN ARCHITECT:

Safdie Architects

GARAGE ARCHITECT:

Moody Nolan, Inc.

GARAGE CIVIL ENGINEER:

George Butler & Assoc.

PAC ARCHITECT OF RECORD:

BNIM Architects

PAC GENERAL CONTRACTOR:

J.E. Dunn Construction Co

IMAGE PROVIDED BY: JEFFREY L. BRUCE & COMPANY LLC

CATEGORY:
**INTERIOR
GREEN WALL**

TEAM

PROJECT:

Papadakis Integrated Science Building, Drexel University, Philadelphia, PA, 1,460 square foot green wall

ARCHITECT:

*Diamond Schmitt Architects
(Award Winner)*

GREEN WALL SPECIALIST:

*NEDLAW Living Walls
(Award Winner)*

ASSOCIATE ARCHITECT:

H2L2

STRUCTURAL ENGINEER:

Halcrow Yolles and Keast and Hood Co.

**MECHANICAL & ELECTRICAL ENGINEER/
LIGHTING CONSULTANT:**

Crossey Engineering Ltd.

LOCAL MECHANICAL CONSULTANT:

SSM Group, Inc.

CIVIL ENGINEERING / LANDSCAPE:

Stantec Consulting Services Inc.

ENVIRONMENTAL CONSULTANT:

Enermodal Engineering, a member of MMM Group Limited

WALL MAINTENANCE:

Parker Interior Plantscape, Inc.

IMAGE PROVIDED BY: DIAMOND SCHMITT ARCHITECTS



GROWING A MORE INNOVATIVE UNIVERSITY

Located at the corner of Chestnut and 33rd Street in Philadelphia, the new Papadakis Integrated Sciences Building is home to Drexel University's Biosciences Department and provides a landmark building for the university. The Integrated Science Building is Drexel's first building to achieve LEED Gold Certification. Sustainable features include alternate transportation, rainwater management and heat island mitigation.

Open and accessible, space is organized around the sky-lit, five-storey atrium containing a 1,460 square foot living wall biofilter (the largest on a US campus) and a 4-storey elliptical stairway that invites a fuller engagement with the university experience. The 1,500 plants used in the green wall (including Algerian ivy, Ficus and more) are integrated into the building's air handling system achieving improved air quality and a reduction in energy consumption. The living wall has the potential to provide 75 to 80 percent of the building's fresh air intake requirement,

"THE LIVING WALL BIOFILTER PROVIDES A FOCAL POINT FOR ENCOUNTERS AND IS SYMBOLIC OF THE SUSTAINABLE DESIGN PRINCIPLES THAT ARE AT WORK WITHIN THE PAPADAKIS INTEGRATED SCIENCE BUILDING."

DONALD SCHMITT, PRINCIPAL, DIAMOND SCHMITT ARCHITECTS

thereby enhancing air quality. This significantly impacts energy performance in the heating and cooling seasons for fresh air over and above ASHRAE 62.1 requirements since the air is pre-tempered.

The wall features a closed-loop hydroponic system. The base of the living wall acts as a water catchment that drains to a reservoir located on the floor below. The inline pumps lift the water from the reservoir to the top of the wall where a diffuser spreads the water evenly across the top. Water then trickles down through the growth media to the catchment. A separate electronic system maintains reservoir volume. Being a closed system, it also means that the nutrients in the water that were not taken up on their pass through the root zone will be

available to the plants on their next circuit rather than being ejected into the drain.

At the top of the five storey living wall a pitched roof skylight runs the full width, to provide daylight illumination. With a depth of over twelve feet, the skylight allows daylight to reach the full height of the living wall for much of the year. During the months where days are shorter, supplemental artificial lighting at the top and bottom of the living wall ensures that plantings receive adequate light.

The client has implemented a diverse research program associated with the living wall biofilter, focusing on the dynamics of the plant microbe interactions. Programs are also underway testing the performance of the technology both under laboratory and field conditions.



2013 AWARDS
OF EXCELLENCE

CATEGORY:
**EXTERIOR
GREEN WALL**

A VERTICAL LEARNING EXPERIENCE

The green wall project at the Drew School was built with the objective to achieve an extraordinary level of biodiversity within the context of a highly urbanized environment where space is at a premium and where the majority of that space is compacted and paved. It was also created to provide a model for other schools that demonstrates the comprehensive benefits of landscape and building technology.

The creation of the school's new theatrical arts and assembly building meant that there would be a blank wall along the street, which offered a perfect canvas for vertical planting and an opportunity to create a highly visible and accessible garden of native wildflowers, shrubs and small trees.

The building's green roof and wall were planned together to create a unified expression of biodiversity and ecological richness. More than 100 different species of native coastal bluff ecoregion plants are planted on the wall, which attracts hummingbirds and butterflies to this dense urban location. Plantings

"THE DREW VERTICAL GARDEN DEMONSTRATES HOW SUSTAINABILITY AND BIODIVERSITY CAN MORE VISIBLY CONTRIBUTE TO THE QUALITY OF THE URBAN ENVIRONMENT."

BONNIE FISHER, PRINCIPAL, ROMA DESIGN GROUP

range from small trees and tall shrubs at the top of the wall to smaller plants immediately visible adjacent to the sidewalk. There is very little maintenance needed—about three or four times a year a lift is used for weeding, pruning and minor replanting.

The wall is supported by a stainless steel structural framework about 2 inches from the primary building wall. Two layers of polyamide felt are stapled on to the supporting PVC board. These layers mimic cliff-growing mosses and support the roots and distribute the irrigation water through capillary action. The wall utilizes automated irrigation systems that provide nutrients and water

to the plant materials.

As this project was implemented for a school, educational programming of the wall is of paramount importance. The 1,800 square foot garden is viewed and experienced daily by the students and faculty and its growth and change is recorded and shared with the larger scientific community, including the Academy of Sciences and the Golden Gate National Recreational Area. It is a living laboratory and a wellspring of learning, and the environmental effects it has on the surrounding neighborhood are integrated into the school curriculum.

TEAM

PROJECT:

Drew School, Sam Cuddeback Assembly Wing, San Francisco, CA, 1,750 square foot vertical garden

PROJECT ARCHITECT AND LANDSCAPE ARCHITECT:

ROMA Design Group (Award Winner)

DESIGNER OF VERTICAL GARDEN:

Patrick Blanc

STRUCTURAL / WATERPROOFING:

Simpson Gumpertz & Heger

IRRIGATION CONSULTANT:

DD Pagano, Inc.

IRRIGATION COMPONENTS:

Rain Bird, Toro, Fertiboost, Badger

LEED CERTIFICATION:

Simon & Associates

GENERAL CONTRACTOR:

Herrero Contractors, Inc.

LANDSCAPE CONTRACTOR / NURSERY:

Rana Creek Design

IMAGE PROVIDED BY: ROMA DESIGN GROUP

CATEGORY:
**INTENSIVE
RESIDENTIAL**

PROJECT:

*Visionaire, New York, NY, 2,075
square foot green roof*

**PRIME CONSULTANT, DESIGNER AND CON-
STRUCTION ADMINISTRATOR:**

*Mark K. Morrison Landscape Archi-
tecture PC (Award Winner)*

DRAINAGE SYSTEM:

American Hydrotech

GROWING MEDIUM:

Long Island Compost & McEnroe Farms

PERGOLA DESIGN:

Fradkin McAlpin Associates Ltd.

STRUCTURAL ENGINEERS:

Robert Silman

SURVEY, FLASHING AND ROOFING:

Eagle One Roofing Contractors Inc.

CONSTRUCTION:

Windsway Construction

IRRIGATION AND LIGHTING:

National Lawn Sprinklers

CONSTRUCTION OF PERGOLA:

Jim Tribe

FOUNTAIN DESIGN AND FABRICATION:

Eve Sheridan

METAL FABRICATION:

MPI Productions

UPHOLSTERY:

Lakeville Interiors

INSTALLED VEGETABLES:

Eagle Street Farm

METALWORK FOR POTTING TABLE:

Haas Welding Services



NEW LEVEL IN URBAN GREENING

The roof terrace at the 35th floor of the Visionaire building maximizes the productive capabilities of this certified LEED Platinum building. This project features more than 160 species of ornamental plants, as well as a potager vegetable garden with vertical screens for climbing vegetables and a fruit orchard with dwarf trees. The project demonstrates that city dwellers with small terraces can grow quantity and quality produce: the vegetables are grown in 4' x 4' boxes. Agricultural features also include a cold frame for continuous harvest, an herbal knot garden and a berry patch for blackberries, raspberries and blueberries. Numerous edible plant materials are interspersed throughout the landscape at large, including strawberry plants as ground cover. The client / owner has successfully used the vegetable gardens as the sole food source for numerous dinner parties.

Roof irrigation uses treated black water from the building. The project has weathered blizzards and other weather events with no damage to the vegetation or building. During Hurricane Irene in 2011, a storm event with 13" of rainfall within a 24 hour period, there was no flooding on the roof terrace.

"THIS DYNAMIC INTENSIVE GREEN ROOF IN NEW YORK CITY SETS A NEW PRECEDENT FOR URBAN AGRICULTURE AND PLANT DIVERSITY ON A ROOFTOP TERRACE, WHILE INCORPORATING SUCH SUSTAINABLE INITIATIVES AS RECYCLING GRAY WATER FOR IRRIGATION AND RETAINING STORMWATER ON SITE."

MARK MORRISON, PRESIDENT AND FOUNDER, MARK K. MORRISON LANDSCAPE ARCHITECTURE PC

This intensive system points to expanded opportunities for an exceptional variety of plant species to survive in extreme conditions and heights (approximately 117m above ground level), while also providing oases for flying species. The client hosted a research project through Scenic Hudson and Columbia University and, contrary to current beliefs, insects and pollinators flew up to the 35th floor (rather than laterally through the city.) The researcher identified over 30 species of bees on the roof terrace. Ecological habitat at various heights could offer productive opportunities for elevated flat surfaces city-wide, while aiding significantly in carbon sequestration and evapotranspiration. The project

is consistently maintained by the client, and outside workers are hired 3 to 5 times a year for significant, seasonal maintenance.

This green roof has achieved the following project goals: providing a restful and beautiful entertainment venue, creating an ornamental garden for the client, expanding possibilities and providing a discourse in urban agriculture and offering ecological habitat (and a research venue) for urban migratory species. The sequential layering of environmental complexity, the extreme ornamental variety and the culinary richness of this green roof together provide a new paradigm in urban greening.

IMAGE PROVIDED BY: MARK K. MORRISON LANDSCAPE ARCHITECTURE PC



2013 AWARDS
OF EXCELLENCE

CATEGORY:
**SPECIAL
RECOGNITION**

A NEW SOLUTION FOR THE SUBURBAN HOME

A new homeowner of a small ranch house in Winchester, MA faced a common dilemma: they had to replace the existing roofdeck, in this case because of cracking caused by a heavy snow load. While many suburban homeowners would have taken the opportunity to replace the existing roof with another conventional roof, this one took the opportunity to gut the house, vault the ceiling, and reinforce the roof in order to support an extensive green roof. The new roof deck was built and waterproofed with a fully adhered Thermoplastic Polyolefin (TPO) membrane.

The homeowner took these steps for a variety of reasons. Living next to a commuter rail line, the client wanted a green roof for soundproofing—the green roof lowers the sound from the rail by 25 decibels. As well, the green roof lowers summer temperatures by 5 to 15 degrees Fahrenheit, depending on the moisture level in the system.

The 4 inches deep growing media of expanded shale, sand and compost supports sedum mats on a 4:12 slope. The plants

“36 OLIVE STREET WAS A FUN SOUP-TO-NUTS PROJECT. WE GUTTED THE INTERIOR WALLS, VAULTED THE CEILINGS, ADDED THE NECESSARY REINFORCEMENTS, RIPPED OFF THE OLD SHINGLED ROOF, AND INSTALLED A FULLY ADHERED TPO MEMBRANE. CONSERVATION TECHNOLOGY WAS INSTRUMENTAL IN HELPING US DESIGN A SIMPLE AND EFFECTIVE ANTI-SLIP SYSTEM, AND WE PLANTED HEARTY CANADIAN SEDUM MATS FROM SEDUM MASTERS. THANKS TO AN INCREDIBLE CREW WE FINISHED THE PROJECT IN UNDER 3 WEEKS.”

MARK WINTERER, GRP, DIRECTOR OF OPERATIONS, RECOVER GREEN ROOFS

were selected for their ability to survive without irrigation, though supplemental irrigation is used during periods of drought. A maintenance visit is made by Recover Green Roofs in the spring and fall, where weeding and organic fertilization is undertaken.

The green roof stands out in its suburban neighbourhood. The plants are visible to all neighbors and change colors with the season, and onlookers slow down when driving to look at the green roof. The

green roof has had a domino effect in the neighborhood, which is experiencing a rise in new renovations, house painting and landscaping. This project is receiving a Special Recognition award from Green Roofs for Healthy Cities for being an outstanding example of how North America's suburbs can be reshaped with green infrastructure given vision and leadership.

TEAM

PROJECT:

36 Olive Street, Winchester, MA,
1,300 square foot green roof

AWARD WINNER:

Recover Green Roofs, LLC
(Design, Build, Maintain)

DRAINAGE SYSTEM:

Conservation Technology

WATERPROOFING MEMBRANE:

Carlisle SynTec

IMAGE PROVIDED BY: RECOVER GREEN ROOFS

CATEGORY:
**INDIVIDUAL
AWARD**

Image provided by: BCIT (Scott McAlpine)



CATEGORY:
Research Award of Excellence

AWARD WINNER:
Dr. Maureen Connelly

Dr. Maureen Connelly, a pioneer in green roof research, established the British Columbia Institute of Technology's (BCIT) green roof research program with its dedicated research facility in 2002. The Great Northern Way Campus facility has been used for research purposes evaluating stormwater mitigation, thermal efficiency, sound transmission and plant viability of vegetated roofs. This successful research facility has provided valuable industry and educational resources for more than 10 years. This research

"THANK YOU VERY MUCH FOR THIS ACKNOWLEDGMENT OF THE RESEARCH WORK FOR WHICH I HAVE HAD THE PLEASURE OF DEDICATING MY EFFORTS TO THE GREENING THE SONIC ENVIRONMENT ... ONE CITY AT A TIME."

MAUREEN CONNELLY

facility and the unique research outcomes sparked the successful proposal to the Natural Sciences and Engineering Council of Canada in 2004, which ultimately led to the creation of the BCIT Centre for Architectural Ecology.

Dr. Connelly's research interests are focused on the acoustical performance of green roofs and walls, as well as the environmental and health benefits of "sky parks" into high density urban environments. She has presented her findings at conferences around the

world and has been published in a variety of publications. She instructs three courses on green roofs and walls and advanced acoustics at BCIT, supervises graduate students and recently created the Cornelia Hahn Oberlander Scholarship and Research Grant to support undergraduate research on green roofs.

For her contribution to the green roof and wall community at both the local and international level, we are proud to present Dr. Connelly with this award.

Image provided by: Scott Potter



CATEGORY:
Civic Award of Excellence

AWARD WINNER:
Scott Potter

Scott Potter has been an advocate for green since becoming the director of Metro Water Services in 2002. Metro Water Services (MWS) is a public water, sewer and stormwater utility that primarily serves the Metropolitan Government of Nashville and Davidson County. Scott has helped shape the area's green roof policy through the creation of plans, design manuals and generous incentives.

In 2009, under the direction of Mr. Potter, MWS developed the Green Infrastructure Master Plan. This Plan assessed the potential impacts of green infrastructure in Nashville's

"A HEALTHY NATURAL ENVIRONMENT AND SAFE DRINKING WATER FOR THE COMMUNITY IS THE ULTIMATE GOAL OF A WATER, SEWER AND STORMWATER UTILITY. NASHVILLE'S PROGRAMS ARE HELPING TO ADVANCE SUSTAINABLE PRACTICES IN NASHVILLE AND MEET OUR MAYOR'S COMMITMENT TO MAKING THE CITY A REGIONAL AND NATIONAL LEADER IN SUSTAINABILITY AND ENVIRONMENTAL QUALITY."

SCOTT POTTER

combined sewer system. The Plan's green roof analysis determined that if green roofs were installed on all flat roofs within the combined sewer area, 112 million gallons of runoff could be prevented from entering the system. Pilot projects demonstrating the benefits of green infrastructure were also identified. One such project would install a green roof on an area high school, which could be integrated into the science curriculum and help educate generations to come. The Green Infrastructure Master Plan has served as an example to other departments, the development

community and the public, demonstrating the importance of green solutions.

Mr. Potter advocated for the creation of a green roof rebate for the combined sewer area, which was approved by the Metro Council in September 2012. Nashville's rebate is one of the more generous in the nation and will pay \$10 per square foot of green roof installed. Mr. Potter also drove the creation of Nashville's new Low Impact Development (LID) Manual as part of the City's goal to encourage green development and become the greenest city in the southeast.

Image provided by Ewing



CATEGORY:

President's Corporate Award of Excellence

AWARD WINNER:

Douglas York

Green Roofs for Healthy Cities (GRHC) is pleased to announce Douglas W. York, president and CEO of Ewing Irrigation Products as the recipient of the 2013 President's Corporate Award. Mr. York oversees operations for more than 195 branch locations in 21 US states.

Ewing has been instrumental in furthering education on integrated water management—an extremely important topic at a time when water conservation and water quality are of increasing concern. Ewing has sponsored the development of GRHC and the American Society of Irrigation Consultants' four professional training courses on Integrated Water Management for Buildings and Sites.

Mr. York represents Ewing throughout the green and wholesale distribution industries, and works to keep the company actively engaged in shaping policy surrounding water scarcity issues at the local, state and federal levels. He is committed to providing industry-leading education programs, and guiding Ewing in its mis-

sion to serve as a comprehensive water management solutions provider and active supporter of local and national water management and conservation initiatives.

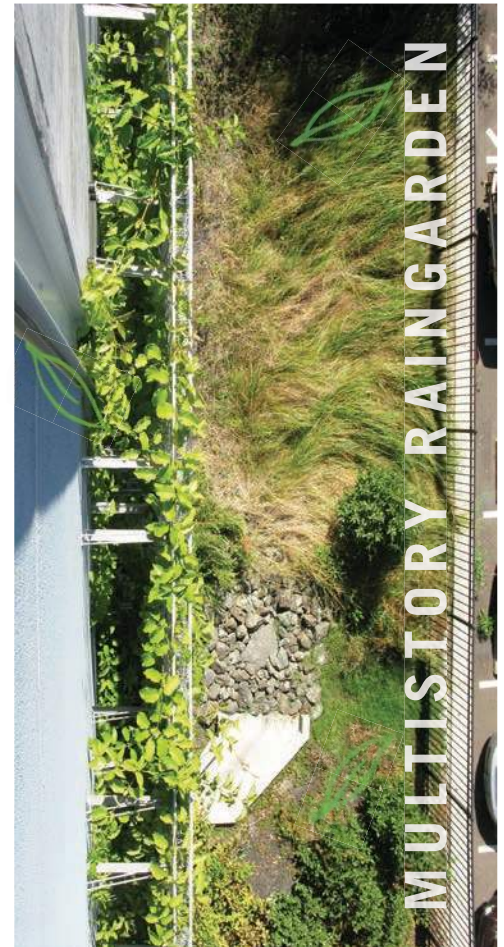
Mr. York has served Ewing in a variety of capacities, including branch management, regional management, sales, new facilities construction, accounting, human resources, marketing and acquisition management. He has previously served as the president of the Irrigation Association (2007) and the International Association of Plastics Distributors (2003), and formerly served as an executive board member for the Arizona Landscape Contractors Association. GRHC would like to thank Mr. York for his contribution to the industry.

“EDUCATION AND WATER EFFICIENCY ARE ESSENTIAL INGREDIENTS IN OUR INDUSTRY'S RECIPE FOR CONTINUED SUCCESS. THESE CORE VALUES HAVE ALWAYS SERVED EWING WELL, AND HAVE BEEN REFLECTED IN OUR CULTURE AND PROGRAMS. SUPPORTING THE PROFESSIONAL TRAINING COURSES FOR THE INTEGRATED WATER MANAGEMENT FOR BUILDINGS AND SITES PROGRAM IS A NATURAL FIT FOR EWING.”

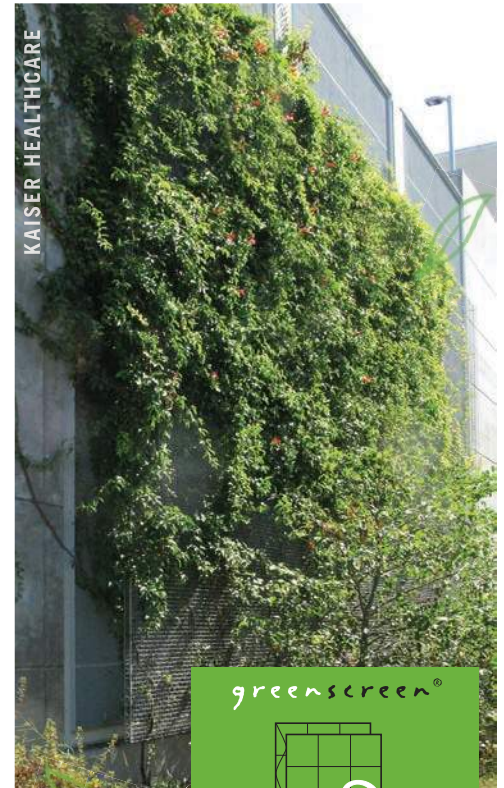
DOUGLAS YORK

FIND OUT MORE

See more photos from all of the 2013 Awards of Excellence projects at <http://goo.gl/jwNX6>.



Five sections of greenscreen® contribute to green infrastructure and urban reforestation.



NEW GRHC BOARD MEMBERS

MATTHEW BARMORE,
product manager, sustainable systems, Firestone Building Products

Board Position: Chair, Corporate Member Senior Advisory Committee

Matt has held a wide variety of positions at Firestone Building Products over the past eight years, most recently the product manager of sustainable systems. Matt was previously a captain for the US Air Force.

GAELE BERGES,
product and development manager, Vegetal i.D. Inc.

Board Position: Director-at-Large

Gaëlle Berges is the product and development manager for Vegetal i.D. With a degree in

agricultural engineering and horticulture, she is driven by sustainability and performance; and is engaged in developing innovations for stormwater management on the roof.

RICHARD HAYDEN,
garden roof department manager, American Hydrotech, Inc.

Board Position: Director-at-Large

Richard is the national garden roof department manager for American Hydrotech, Inc and an accredited Green Roof Professional (GRP). Richard has been a practicing landscape architect and an infrastructure, streetscape and urban designer for more than 33 years.

VIRGINIA RUSSELL,
horticulture program director and

associate professor, University of Cincinnati

Board Position: Research Chair

Virginia is a registered landscape architect, licensed trainer, accredited Green Roof Professional (GRP) and horticulture program director and associate professor at the University of Cincinnati. Virginia also sits on the editorial review board of GRHC's *Journal of Living Architecture*.

The following individuals terms have been renewed on the Green Roofs for Healthy Cities board: Jeffrey Bruce, Peter Lowitt, Paul Sheehy, Tricia Dunlap, Dr. Hamid Karimi, Michael Krause, Oscar Warmerdam and David Yocca

PROFESSIONAL CALENDAR

GREEN ROOF BOOT CAMPS *(Now Only 3 Full-Day Courses) Save \$299!*

Calgary
Dec 5-7, 2013

Washington, DC
Jan. 30 – Feb 1, 2014

Toronto
Feb. 27 – Mar. 1, 2014

HALF-DAY COURSES

Living Architecture and Sustainable Energy
Toronto
Nov. 26, 2013

Advanced Green Roof Maintenance

Washington, DC
Dec. 5, 2013

Toronto
Mar. 18, 2014

Green Walls 101: Systems Overview and Design

Toronto
Mar. 12, 2014



ENGINEERED SOIL HAS OFFICIALLY MET ITS MATCH

The MP Rotator provides the perfect solution for engineered green roof soils. Multi-trajectory rotary streams cut through wind and slowly apply water to the growing medium. This provides optimal plant water use while using up to 30% less than other overhead spray systems.

Featured: The MP Rotator is the most efficient and effective choice for overhead green roof irrigation.

VITAROOFS

CHOICES!

WE THINK OUTSIDE THE GREEN ROOFTOP... WITH THE CHOICES
THAT CAN MAKE YOUR VISION REALITY.

At Vitaroofs, we don't sell you a system. Instead, we work with you to make your vision happen—whether it's about colour, design, height, breadth, structure or climate. Having been involved in North America's most celebrated projects such as Ford Guinness Book of Records River Rouge Plant and Vancouver's Olympic Village, we know better than to dismiss unconventional thinking. It got us where we are today.

THE UNCONVENTIONAL & THE TRIED AND TRUE

CALL TO LEARN WHAT THAT WOULD MEAN FOR YOUR GREEN ROOF PROJECT.

TEL: 905.565.9669 INFO@VITAROOFS.COM WWW.VITAROOFS.COM



NEW CORPORATE MEMBERS

FIDDLER'S GREEN LANDSCAPING WWW.FIDDLERSGREENINC.COM

The mission of Fiddler's Green, out of Calgary, Alberta, is to provide residential design-build service which is superior in implementation and end result. They take great care in assisting their clients at every stage of the landscaping experience, from the early planning phase to the installation of their new oasis.

FURBISH WWW.FURBISHCO.COM

Furbish specializes in green roofs, green walls, and living systems. With a driving passion for innovation and a deep commitment to sustainability, we provide systems that utilize nature's processes to create synergy between the built environment and its inhabitants. Through our products and services, Furbish is dedicated to maximizing asset value via ecosystem services.

LAND STUDIO C WWW.LANDSTUDIOC.COM

Founded in 2009, Land Studio C in San Rafael, California, is a full-service landscape architecture practice born of Darren M. Reynolds and his passion for outdoor spaces and the connection between humans and nature. Darren started Land Studio C to utilize his 16 years of landscape architecture experience to help clients realize their contemporary landscape goals.

SHERIDAN NURSERIES WWW.SHERIDANNURSERIES.COM

For almost a century, Sheridan Nurseries in Oakville, Ontario, has been providing superior products, services and helpful advice. The company has 9 garden centers and over 900 acres of farmland. They are also a major supplier of goods to garden centres in eastern Canada and the US.

GRHC BUYERS GUIDE

AMERICAN HYDROTECH INC
303 E. Ohio St. #270,
Chicago, IL 60611
www.hydrotechusa.com

CARLISLE SYNTEC
1285 Ritner Highway,
Carlisle, PA 17013
www.carlisesyntec.com

CARL STAHL DECORCABLE
660 W. Randolph St.,
Chicago, IL 60661-2114
www.decorcable.com

CCI GROUP INC.
7900 Keele St. #200,
Concord, ON L4K2A3
www.ccigroupinc.ca

CETCO
2870 Forbs Ave.,
Hoffman Estates, IL 60192
www.cetco.com

ETERA
14113 River Bend,
Mount Vernon, WA 98273
www.etera.com

GREENSCREEN®
1743 S. La Cienega Blvd,
Los Angeles, CA 90035-4650
www.greenscreen.com

HUNTER INDUSTRIES
1940 Diamond St.,
San Marcos, CA 92078
www.hunterindustries.com

INTERNATIONAL LEAK DETECTION
375 Finley Ave. #203,
Ajax, ON L1S2E2
www.leak-detection.com

JAKOB
955 NW 17th Ave, Unit B,
Delray Beach, FL 33445
www.jakob-usa.com

JELITTO PERENNIAL SEEDS
125 Chenoweth Ln. #301,
Louisville, KY 40207
www.jelitto.com

LIVEROOF LLC
PO Box 533,
Spring Lake, MI 49456
www.liveroof.com

MOTHERPLANTS
863 Hayts Rd.,
Ithaca, NY 14850
www.motherplants.net

PERMALOC GEOEDGE
13505 Barry St.,
Holland, MI 49424
www.permaloc.com

RECOVER GREEN ROOFS, LLC
9 Olive Square,
Somerville, MA 02143
www.recovergreenroofs.com

ROOFLITE (SKYLAND USA)
PO Box 159,
Landenberg, PA 19350
www.rooflitesoil.com

ROOFMEADOW
7135 Germantown Ave.,
Philadelphia, PA 19119-1842
www.roofmeadow.com

SEMPERGREEN
17416 Germanna Highway,
Culpeper, VA 22701
www.moeringsusa.com

SIKA SARNAFIL
100 Dan Rd.,
Canton, MA 02021
www.sustainabilitythatpays.com

SODPODMOD®
PO Box 260, Sea Ranch,
CA 95497
www.sodpodmod.com

SOPREMA
1688 Jean-Berchmans-Michaud,
Drummondville, QC J2C 8E9
www.soprema.ca

STANCILLS/SKYGARDEN
499 Mountain Hill Rd,
Perryville, MD 21903
www.stancills.com/skygarden

TECTA AMERICA
9540 W. Bryn Mawr #500,
Rosemont, IL 60018
www.tectaamerica.com

TURF DIAGNOSTICS & DESIGN
613 E. 1st St,
Linwood, KS 66052
www.turfdiag.com

VITAROOFS
1087 Meyerside Dr. Unit 7-8,
Mississauga, ON L5T1M5
www.vitarooofs.com

FIND OUT MORE

For more information on advertising, contact Jennifer Foden Wilson, editor, *Living Architecture Monitor* at jfodenwilson@greenroofs.org or 416-971-4494 ext. 231.

WHY IRRIGATE?

REGARDLESS OF THE LOCATION AND CLIMATE OF YOUR GREEN ROOF, IRRIGATION IS THE KEY TO SUCCESS

TODD POLDERMAN, GRP

Whether you are in Chicago, Berlin, or anywhere in between, planning for irrigation on your new green roof project is the best way to ensure healthy, durable plant material. After all, vegetation provides many of the benefits we associate with green roofs, such as heat mitigation, improved air quality, aesthetic improvement, filtering rainwater, and the ability to grow food. Plant roots anchor the growing media to the roof—and when they are dry or have died, the roof ceases to provide these valuable benefits. Plants can convert 80% of solar radiation into evaporation, and irrigation provides plants with the water needed to perform this vital function. Even in wet and cool climates, plant establishment and drought protection makes irrigation a wise investment for any project. Water used for irrigation helps offset energy use for mechanical cooling, and by extension, the water used to produce the electricity.

The irrigation industry has all the products needed to support any green roof or wall project worldwide. The brains of the irrigation system are the combination of controller and valve. Both can be powered by AC or battery (DC) and some can be charged by solar power. When no power is available, or when temporary irrigation systems are needed, automatic irrigation control can

be provided. Controllers send runtime messages to the valves, which deliver water to irrigation devices.

OVERHEAD

Water can be delivered overhead in the form of rotors or multi-stream, multi-trajectory (MSMT) nozzles, or below the surface using fleece-based irrigation matting. MSMT nozzles are designed to cut through the wind and provide the most efficient overhead irrigation delivery.

BELOW GRADE

Providing irrigation below grade with fleece-based irrigation delivers water where the plant material can use it, eliminates overspray, and provides additional water-holding capability for lightweight growing media. This method also permits fertilization directly to the roots by means of a fertilizer injector.

DUAL SYSTEM

A dual system, one featuring both overhead and subsurface irrigation, is the most comprehensive choice. Overhead irrigation is used during roof establishment and periodically to clean the plant material; the subsurface system provides routine irrigation and fertilization.

Accessories help with project management by providing tools that aid in the

ECO-MAT INSTALLATION ON NEW HOSPITAL ON CAMP PENDLETON NEAR SAN DIEGO, CALIFORNIA

Image provided by: Hunter Industries

maintenance and operation of the irrigation system. Weather based, or “smart” control, is today’s buzzword when it comes to efficient irrigation practices. Sensors should be added to a controller to provide onsite, weather-based, daily irrigation adjustment while providing rain and freeze shut-off protection. Automatic irrigation has clear advantages, as it schedules adjustment during different seasons, without the need to physically touch the controller.

When maintenance is required, remote controls can help save time and reduce labor requirements by enabling the maintenance person to activate irrigation without walking to the controller.

Green roofs are designed to provide many public and private benefits and healthy plants are integral to the success of most. Regardless of the location and climate of your green roof, a well-designed, installed, and maintained irrigation system provides the water necessary to keep plants healthy, delivering successful benefits for many years.

Todd Polderman is the product marketing manager for Hunter Industries.



Have you **Experienced** the Difference?

Carlisle Construction Materials offers a dedicated network of Green Roofing Professionals and installers and an industry-leading, single-source warranty for the entire Roof Garden system. Our unique products and specifications provide you with an incredible amount of flexibility, creativity and customizability. Combining the optimal blend of growth media, retention and drainage composites with dependable waterproofing protection, Carlisle is simply without equal. Nowhere else in the industry will you find the same level of service, support and quality for your Roof Garden projects.

EXPERIENCE THE CARLISLE DIFFERENCE
800.479.6832 | www.carlislesyntec.com