



COLORADO

The Green Building Community

Winter 2011

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Executive Directors Corner

Deb Kleinman

As the holiday season approaches, it is time to plan for year-end contributions to your favorite nonprofit organizations. We hope that you consider making a donation to USGBC Colorado, and support our vision that buildings and communities will regenerate and sustain the vitality of life within this generation.

Since 2002, USGBC Colorado has grown from a small group of dedicated and passionate volunteers interested in growing the green building community in Colorado to an organization made up of over 1,000 individual's intent on transforming the built environment in Colorado.

Together, we are making a difference!

- *We have contributed to the development of a green economy by helping hundreds of Coloradoans prepare for their LEED credentials, and by providing ongoing affordable and accessible continuing education for the green building community.*
- *We have worked with school districts to ensure that all Colorado children have the opportunity to attend a high performing healthy school.*
- *We have advocated for high performing healthy and affordable built environments at the state and local level, altering how people perceive green buildings.*

Contact Us



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With your donations, memberships, and volunteer support, we will continue to be the catalyst to transform the built environment in Colorado and a model for the country. All Coloradoans within this generation will be able to live, work, learn and play in high performing and healthy buildings. New green jobs in Colorado will be created through the demand for these green buildings, and our environment, economy, and community will prosper.

Jason Wulf, a longtime volunteer with the USGBC Colorado Southern Branch, said it best: *“I want to make a difference. I want to be a part of something bigger than myself. My big motivation is my children – I want the world to be a better place for them.”*

Your support is integral to the success of our charitable organization, and your tax-deductible gift will help maintain and improve our fantastic programs.

On behalf of the USGBC Colorado Board of Directors, our hundreds of volunteers, and our tiny staff, I would like to wish you a wonderful holiday season and best wishes for a very green 2012.

Deb Kleinman, Executive Director

[Learn more about how you can support USGBC Colorado](#)

RMCAD: Colorado's First USGBC Student Group

Jenny Nelson

[Rocky Mountain College of Art & Design \(RMCAD\)](#) is a four year, fully accredited College set on a scenic 23 acre site in Denver, Colorado. Built in the early 1900's, the campus was previously the site of [Jewish Consumptive Relief Society](#). Many of the buildings on campus are listed on the [National Register of Historic Places](#). RMCAD offers a variety of art degrees and features a [CIDA Accredited Interior Design Program](#) with an emphasis in sustainability. Pioneered by Julie Pollack, students in the emphasis are taught sustainable design principles in depth, including biophilia. Studying at RMCAD provides students exposure to the challenges of integrating historic preservation and sustainability. Naturally, both issues have grown into a passion for the Interior Design students and faculty.



Outside of academics, environmentally friendly practices on campus are growing, thanks to the College's [Institute for Sustainable Studies](#). RMCAD is a member of the [Association for the Advancement of Sustainability in Higher Education \(AASHAE\)](#), [USGBC](#), and

Resources

USGBC Students Toolkit
Download

Center for Green Schools:
Higher Education

Transform your Campus



[Colorado Environmental Leadership Program](#). Last summer, the campus was awarded Bronze Certification under [STARS \(Sustainability Tracking, Assessment & Rating System\)](#). Additionally, RMCAD hosts an annual sustainable art auction, RMCYCLE. Proceeds benefit a different community charity each year. In 2011, RMCAD alum and USGBC Colorado volunteer, Jennifer Nelson, established Colorado's first USGBC Student Group at RMCAD. Starting the group was driven by the desire to further promote sustainability within the built environment and offer students LEED Accreditation resources. Currently, the group is serving students by providing a [LEED Green Associate](#) exam study group, networking with industry professionals, community involvement, design contests, and project resources. Group members are also looking forward to partnering with like minded organizations and fellow student groups in Colorado.

Website- www.wix.com/usgbcestudents/rmcad
Contact: USGBCStudents@rmcad.edu

A Report from the Green Schools Summit 2011

Margaret Pauls

Outside, the fall day was crisp and bright. Inside, daylight streamed into the Evie Garrett Dennis Student Commons, where approximately 250 school administrators, facility managers, teachers,

construction professionals, and school designers kept warm and invigorated by the success stories of Colorado school districts at the 5th annual Green Schools Summit. The summit is a yearly outreach and educational event organized by the U.S. Green Building Council Colorado's volunteer run [Green Schools Initiative](#). The Green Schools Initiative's mission is to "*Green Colorado's schools within this generation.*" Considering the challenging economic climate, this year's summit provided a unique learning and networking opportunity through three focused panel discussions. The panel format facilitated audience member interaction with panelists and discussions were tailored to the needs of participants.

The first panel, "*Traditional and Non-traditional Sources of Funding*" included experts from utility based incentive programs, performance contracting, the bond and finance industry, and [CORE, the Community Office for Resource Efficiency](#). The panel fielded numerous questions regarding the use of performance contracting to fund capital improvements.

The second panel discussion, "*High Performance Design and Operations on a Budget*," highlighted how [Sangre de Cristo School District](#), a [CDE BEST \(Build Better Schools Today\)](#) project in rural southern Colorado, created an energy saving, inspirational place for learning within a modest budget. The team noted that the mechanical systems, daylighting, and architectural features

“The event brought stakeholders vital to the creation and operation of healthy high performing schools together to share knowledge, celebrate success, and arm themselves with practical information and ideas for the future.”



worked together to create the integrated solution necessary to achieve performance targets exceeding the LEED Gold requirements.

Lastly, the “*Ideas into Buildings*” panel celebrated how local Colorado schools from Boulder to Canon City and Aurora to Douglas County have used student lead occupant behavior programs, education and outreach, the LEED rating system, proactive maintenance, and utility company incentives to save money and provide places that enhance their districts’ educational mission.

The day was completed with an update on the BEST program from Ted Hughes of the Colorado Department of Education and an inspiring tour of the [Evie Garrett Dennis Campus](#) lead by the [DLR Group](#) and sponsored by the [Council of Education Facility Planners International \(CEFPI\)](#).

The event brought stakeholders vital to the creation and operation of healthy high performing schools together to share knowledge, celebrate success, and arm themselves with practical information and ideas for the future. In addition, the summit proved Coloradans are leading the charge to providing the right facilities for our youth and highlighted that there is still a long way left to go.

The Green Schools Initiative encourages school districts to continue the dialogue by communicating district needs and questions to the committee, so we can tailor our outreach to support school districts’

efforts to provide buildings that teach, improve facilities, and increase energy, water, and operational savings.

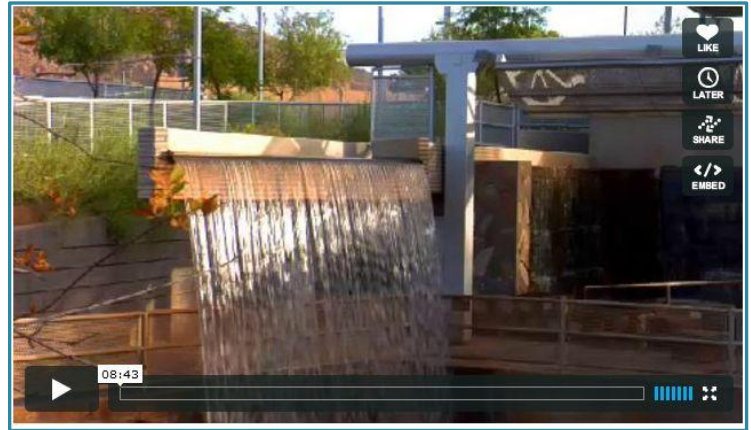
USGBC Colorado Southern Branch contributes to LEED for Homes Project

Karen Altman

[GJ Gardner’s](#) new home in [Gold Hill Mesa, Colorado Springs](#), recently qualified for three national certifications, including the [WaterSense®](#) label. Since teaming up with the [U.S. Environmental Protection Agency’s \(EPA’s\)](#) WaterSense program, GJ Gardner has completed the first labeled home in the State of Colorado and the first in Colorado, Wyoming, Montana, and the Dakotas! It is also Colorado Springs’ first LEED certified home, and is also [EnergyStar](#) certified, scoring an astounding 13 on the [Home Energy Rating Score \(HERS\) index!](#)



Frank Kinder, [Colorado Springs Utilities](#) and Advocacy co-chair, assisted the builder and suppliers in design and specifications for WaterSense certification, which is only the 55th of its type in the country. Eric Fetsch, Larry Gilland, Kevin Vider, John Olson and others from [USGBC Colorado](#)



Watch: Benefits of a Green Home

[Southern Branch](#) acted as project consultants, registered and interpreted building features through numerous tours and presentations, and facilitated the home's pursuit of LEED for Homes Gold. [EnergyLogic](#) was the provider and certified all three rating systems.

WaterSense is a partnership program sponsored by the U.S. EPA, seeking to protect the future of our nation's water supply by offering people simple ways to use less water. See resources below for more information on WaterSense labeled Homes, a full list of labeled products and WaterSense irrigation partners. Each WaterSense labeled new home is independently inspected and certified by a third party to ensure EPA criteria are met for both water efficiency and performance. WaterSense labeled new homes are built to use 20% less water than a typical new home inside and out using WaterSense labeled plumbing products, water-efficient fixtures and landscaping design, and a hot water delivery system that reduces the amount of time and energy needed to provide warm water for bathing and cleaning while providing high performance, comfort, value, and savings.

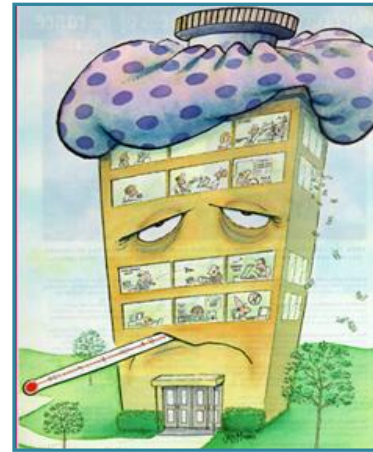
“Owning a WaterSense labeled new home means you can enjoy all the comforts that one would expect

of a new home while using less water, energy, and money,” said Sheila Frace, Director of the EPA Office of Water’s Municipal Support Division. “A family of four who invests in a WaterSense labeled model can save \$600 on utility costs every year and save water for future generations.” Each year, a family of four can reduce their water use by about 50,000 gallons—you would use that much water to shower for an entire decade! You can also save enough energy to power a refrigerator for up to two years.

These sensible steps will not only save money for homeowners but provide important examples for Coloradans as we understand water is a treasure for the entire state, important for our homes, but also for our farmers, rivers, wildlife, industries and tourism”

“We applaud the innovative builders who are taking such a thoughtful approach to water. These sensible steps will not only save money for homeowners but provide important examples for Coloradans as we understand water is a treasure for the entire state, important for our homes, but also for our farmers, rivers, wildlife, industries and tourism,” said John

Stulp, special policy advisor for water to Gov. John Hickenlooper. “Such responsible approaches to water helps our economy and environment thrive.” The builder was already in framing when approached about LEED and WaterSense, so close coordination was necessary for product specs and design. Wayne Intermill, owner of GJ Gardner Homes Northgate, was challenged to achieve the certifications, and eager to understand the values



The U.S. Environmental Protection Agency (EPA) ranks indoor air pollution, commonly called sick building syndrome, costs businesses \$60 billion annually.

they could provide to his home. The home was a feature location at the [2011 Parade of Homes](#), and won numerous awards in its category. Notable technologies include a photovoltaic array that provides 92% of energy needs and a geothermal hybrid heating system using three 365 foot deep wells, providing a comfortable, quiet, and efficient home. It has been a case study for presentations at the WaterSmart Innovations Conference, Colorado Sustainability Conference, and December’s EnergyStar Conference.

“GJ Gardner is proud to offer a smart investment for homeowners in the state of Colorado and a long-term investment in saving precious natural resources,” said Intermill. The house and builder was recognized at Gold Hill Mesa on September 29th by Colorado Springs Utilities, [Colorado Water Conservation Board](#), Environmental Protection Agency, [Colorado Department of Public Health and Environment](#), and the [State of Colorado](#).

Resources

LEED for Homes
FAQ’s

EPA’s Energy
Star Program

EPA’s
WaterSense

LEED for Homes
Case Studies

Envelopes and Unexpected Consequences

Phillip Saieg



The ecologist [Garrett Hardin](#), writing about complex systems, famously said, “We can never do merely one thing.”

He meant that such systems have lots of bits and pieces that interact with each other in sometimes nonlinear and unpredictable ways. Tweaking any of them can produce unexpected changes in one or more of the others, which may have their own cascade effects (which is why good architects understand that the best solutions will solve multiple problems).

This unavoidable fact of nature confronts building owners and managers every day, because buildings are complex systems. One of the ways this complexity can reveal itself illustrates the tension that sometimes arises in pursuing the goals of energy efficiency and healthy indoor air quality.

Let’s say you, as a conscientious building owner or manager, decide to have an energy audit done. Because you want to drill down to the fundamentals of your building’s performance, you go the extra mile and include a blower-door test. However, proving once again that no good deed goes unpunished, this test reveals that you’ve got a pretty leaky building with an NACH rating (natural air

BEDG

BUILDING ENVELOPE DESIGN GUIDE

The National Institute of Building Sciences (NIBS) under guidance from the [Federal Envelope Advisory Committee](#) has developed this comprehensive guide for exterior envelope design and construction for institutional / office buildings.



Possible Causes of Poor Indoor Air Quality

changes per hour) of, say, 0.6—practically like leaving the windows and doors open year round. So you embark on a program to tighten the building envelope, a relatively cheap way to boost energy efficiency and lower energy bills. It doesn't take long for the payoff to show up. But something else happens, too: previously healthy tenants begin to complain about headaches and other vague ailments. Absenteeism rises, productivity declines. A few even move out when their leases are up.

You've suddenly got a sick building. Or rather, your sick building's symptoms are no longer mitigated by the extra air your HVAC system was forcing through the building. Poor indoor air quality was masked by the once-leaky envelope.

Building air can host myriad troublesome particles and gases: dust, pollen, volatile organic compounds (VOCs), mold, pet dander (in pet-friendly offices), radon, tobacco smoke, formaldehyde, asbestos and pesticides, to name a few. Some are merely irritating; others are actively toxic and/or carcinogenic. Of course many originate outside the building, so any ventilation at all will introduce them into the conditioned air within. Unless you want to install a filtration system suitable for a nuclear bunker, there's not much to be done about them. But the rest, especially VOCs, likely come from the building itself—its furniture, flooring, floor- and wall coverings, and so on, plus products such as adhesives, pesticides and cleaning solvents used in the building. Ironically, even some products

used to seal and insulate buildings, such as closed-cell isocyanate foams, can be toxic. Ordinary fiberglass batt insulation can release hazardous airborne fibers.

Navigating a safe and effective course through these hazards to achieve a high-performance building envelope while avoiding the downsides can be tricky. Reliable data about how "green" products are made and perform are often hard to come by. In Part 2 of this column I'll further explore these issues and identify some navigational tools that can help building owners, managers and designers who are venturing out on these waters.

Resources

[Do You Suspect Your Building Your Building has IAQ Problems?](#)

[EPA Resources on Indoor Air Quality](#)

[I-BEAM IAQ Building Education and Assessment Model](#)

[Integral Building Envelope Performance Assessment](#)

Take a Survey: Win an iPad 2

The [Portland Cement Association](#) is conducting a significant survey of USGBC local chapter members to better understand your awareness of sustainable development as it relates to construction, cement, and concrete products. The information from this survey will allow them to serve you better with final survey results provided to you.

By completing this survey, you will have the opportunity for a drawing for an iPad®. Your input will speak for many others like you; therefore your participation is important for accurate and meaningful results. Survey results will be aggregated, with no individual responses revealed.

Thank you in advance for your participation!

Sincerely,

Portland Cement Association

[Click here to launch the survey](#)

Concrete Solutions: Selecting the Right Materials for the Right Job

Leo Antencio



Due to the growing assortment of materials on the market, it is becoming increasingly important to select the right material for the job.

Concrete is the world's most used construction material.

Over 25 billion tons (23

trillion kg) of concrete are used each year¹. Concrete has been a sustainable solution dating back to 80 A.D when the Roman Coliseum was constructed and still stands today. Advances in cleaner, lower carbon cement have further propelled concrete as a viable contributor to sustainable construction.

Concrete's agility provides a valuable design solution when intricate detail, aesthetics and durability are the objective. Furthermore, artistic autonomy can be achieved through enhancements of integral color. Reduce, reuse, and recycling strategies are also accomplished with concrete.

The contributions of concrete and design are endless. Concrete can assist in reducing heat island impacts, even when enhanced with decorative color;

the SRI values are higher than the SRI value of 29 needed to satisfy most requirements. When facing hydrological concerns related to stormwater quality and quantity, pervious concrete is a sensible solution offering permeability of 8-264 gal./min./sqyd. The increasing and advancing need to reduce energy is another motivation to select concrete. The thermal mass attributes of concrete, when complemented with an adequate HVAC design, can lower energy costs. Finally, the innovation of concrete formulation provides an alternative to landfilling and creates recycled concrete aggregate to be regenerated into a new concrete product.

As the sophistication of the building environment evolves, so do the solutions concrete must achieve. Natural disasters will continue to impact the nation and the materials selected for housing and developments must be more resilient, while simultaneously lowering insurance costs. Furthermore, the unfortunate effects of terrorism and its influence on design related to blast effects, progressive collapse, and other unforeseen circumstances must also be considered when selecting materials and resources.

Concrete has and will continue to evolve and the innovation behind concrete will reduce the gap between consumer need and product development.

¹ World Business Council for Sustainable Development 2009