Project Profile

Alfred A. Arraj U.S. Courthouse
by Audrey Lengel, The RMH Group

Sustainable Design from the Engineer’s Perspective.

When the Alfred A. Arraj U.S. Courthouse opened in October 2002, few people knew it was the culmination of nearly a decade of appropriations, design, and construction work. In fact, the initial contract for this 10-story landmark was awarded to the design team of Anderson Mason Dale in partnership with Hellmuth, Obata + Kassalbaum in 1994. Over the nearly decade-long design and construction period, the courthouse was adapted to respond to the evolution of sustainable design and the LEED program. In effect, the project came to be a laboratory for LEED design and construction, and the very accomplished design team learned and adjusted as the project moved forward.

While the whole design team had to be flexible, the mechanical and electrical engineers faced the added responsibility for much of the building's energy efficiency. Steve Bickmore, P.E., Building Systems Division Manager of The RMH Group commented on the challenges. “When we started down the sustainable design path, very few buildings and just a handful of people had been through the process. It pretty much felt all new to us to go through the green checklist and the LEED 1.0 worksheet. Add to that, the sustainable goal had to be balanced with other design constraints and priorities.”

Design commenced with a micro-programming and planning phase, requiring close coordination with the client and participation in numerous working conferences and reviews. With that work complete, the project was iced down during a 23-month departmental and Congressional review period and funding appropriation. During this two-year hiatus, the General Services Administration experienced near tectonic shifts in two design criteria – security and green design. The
Alfred A. Arraj U.S. Courthouse
Continued

The bombing of the Alfred P. Murrah Federal Building in Oklahoma City heightened awareness of security shortcomings in Federal properties throughout the U.S. It also expedited funding for Denver’s new courthouse, spurred on by the city’s prominence as a regional Federal justice center.

It was also in the mid-1990s that the General Services Administration took notice of the growing green design movement. With new performance criteria retrofitted into the program for the Arraj Courthouse, one of the first tasks as the project resumed was the convening of what was dubbed a Green Building Panel to assess green building design opportunities. This panel comprised many of the nation’s leaders in sustainable design, including the chair of the still-young USGBC. While the LEED protocol was not yet in place, the Green Building Panel evaluated options by brainstorming through different performance categories, much along the same lines as LEED. These were:

+ Site and Transportation
+ Energy – Building Design
+ Energy – Electricity
+ Energy – Heating, Cooling, and Ventilation
+ Materials
+ Indoor Air Quality
+ Water Utilization
+ Occupant Productivity
+ Facility Operations
+ Construction

The GSA designated the courthouse would be a showcase for sustainable design and directed the design team to use “the latest available proven technologies for environmentally sensitive design, construction, and operation.” In response, the Green Building Panel’s issued a report proposing an ambitious and all-encompassing palette of options. The report was distributed to the entire design for review, and every item was evaluated and run through a cost/payback model.

The design that emerged from these ideas was tempered to create a sustainable, yet executable, solution. From an engineer’s perspective, a number of the ideas were in conflict with each other or with the limitations of the site and urban environment. Code restrictions and stringent security requirements made other less attractive.

The greatest challenge for the mechanical and electrical engineers was the building’s less than ideal orientation. RMH’s lighting designer Mark Rudiger, LEED AP, observed, “The building’s orientation was one of the biggest challenges to the project. We were locked into a city block. Add to that, part of the footprint had to be left to accommodate a future wing, fur-
The stringent security requirements posed another problem. According to Bickmore, “The sustainable design had to work hand-in-hand with the security requirements, which, like the green criteria, were a whole new set of parameters for the team to work through. Both sets of criteria were competing for dollars on the project.”

To achieve an efficient design, the team applied a two-pronged strategy to first reduce energy loads and to then meet the reduced loads through high-efficiency systems and renewable energy sources. Among the high-efficiency systems are underfloor displacement ventilation and evaporative cooling. The courthouse represents a very large-scale application of both technologies. The displacement ventilation system uses a raised access floor to deliver low-velocity air at floor level, efficiently conditioning the space and removing air pollutants. In combination with all the other HVAC subsystems, the mechanical equipment placed a heavy demand on space throughout the building. Though not ideal, the supply for the courtroom displacement ventilation had to be combined with the VAV supply to save space. Best operation was obtained through dogged commissioning by E-Cube. Paul Watters, RMH’s mechanical construction engineer, noted, “We were all learning. There simply wasn’t room for a separate supply, so we had to compromise. E-Cube did a great job in getting it all to work.”

RMH was also charged with lighting design, as well as integration with Architectural Energy Corporation’s daylighting design through the building automation system. Daylighting is used extensively to provide the required ambient light levels within the judges’ chambers, perimeter office spaces, and the public corridors on the first and second floors.
Rudiger found that a number of the judges were naturally apprehensive about how the lighting and daylighting would work together, given their limited experience with daylighting. To reassure them, a lighting mockup was carried out in the one courtroom that was completed prior to all other interior finish construction.

Fine-tuning for the special proceedings courtroom required another approach. The room’s lighting consists of halogen downlights suspended in a curved perforated ceiling daylit from above and illuminated by linear fluorescent uplights. The stone finish of the wall behind the judge’s bench picked up a strong reflection from the daylighting, and it was honed to a new finish to minimize the glare. “In the end, everything worked,” said Rudiger. “If we’d started going for LEED, rather than thinking about LEED at mid-design, parts of the building would probably look and function differently.”

It was everyone’s commitment to sustainable design throughout construction, the laboratory for all design, that made the project a success. This success is recognized with several awards, including a GSA Environmental Awards in 2001 and a Renewable Energy in Buildings Colorado Awards, conferred by the Colorado Renewable Energy Society. The building was also earned an EPA Energy Star rating, and GSA may pursue LEED certification this year, with Gold in sight. GSA’s goal to promote sustainable design and LEED for Federal justice facilities continues in downtown Denver. Next up: renovation of the Byron G. Rogers U.S. Courthouse, now in construction. This project, one of 50 selected throughout the U.S. for the prototype LEED for Existing Buildings application, is expected to earn a Silver rating.

Sustainable Features - General

• The building’s footprint was sited to minimize runoff. Its landscape functions as a self-contained ecosystem that does not require much care or irrigation and is populated with indigenous and xeric plants such as buffalo grass. Drip irrigation is used for the landscape’s minimal watering needs.

• Hardscaping was constructed using sand setting, rather than concrete, to increase water absorption capacity and reduce stormwater runoff. Low-traffic perimeter areas use grass-block paving and crushed stone surfaces to the same effect.

• Local materials, such as native stone, and recycled-content material, including steel, make up much of the building’s structure and exterior. The majority of the flooring materials are from recycled or native sources, including sandstone, cork, and recycled plastics.

• Interior finish materials were carefully selected based on their environmental and occupant impact, such as embodied energy, indoor air quality, and resource depletion. All paints and adhesives are low in VOCs. The maple paneling was specified from certified forests.

• The building’s occupants are well served by public transportation, including light rail and buses. More than 20 percent of the staff uses public transportation or bicycle to work.

• The contractors implemented a recycling plan for metals, woods, paper, and other materials. The building’s occupants have ready access to recycling bins on each floor for paper and cans.
Chapter News

Chapter Committee Updates
by Annette Stelmack, Associates III, Chapter President

Chapter Board Meetings
annette@associates3.com

- The board of directors meets on the first Monday of the month from 4:00 – 5:30 pm
- Our Board meetings are open (although we may on occasion have a closed discussion if there is a potential conflict of interest on an issue) and we welcome your input on a non-voting basis
- Thanks to everyone for your continued efforts, commitment, perseverance and hard work within all the committees!

Collaboration Committee
kennis@boulderassociates.com

- Participated in legislation effort through contacting collaborating organizations and writing comparison between Energy Star, Green Globes and LEED
- In a joint effort with Building Colorado Coalition, The High Performance Sustainable Buildings Legislation was passed by the Senate, as amended. From there the bill was dropped this year from the House docket, in accordance with our recommendation. The next session starts at the beginning of January 2006. Between now and then the Building Colorado Coalition needs to:
  - Educate relevant and affected business sectors, non-profit organizations, legislators, and government agencies of the need and impact of such legislation
  - Increase its outreach and add coalition members
  - Work with interested parties to agree on language for legislation
  - Get commitments from key legislative sponsors

Communications Committee
tom.hootman@rnldesign.com

- Ongoing Chapter communications including monthly newsletter, bi-weekly email bulletins, website updates, and special email announcements.
- Produced a Chapter Emerging Green Builders brochure and currently developing an updated Chapter brochure.

Education Committee
Lauren.Denner@domani-llc.com

- If you are interested joining the Emerging Green Builders (EGB) contact Ashley Muse, Ashley@ensargroup.com or Stephany Taddeo, staddeo@pearcom.com.
- For posting jobs/internships please contact Amanda Portman, amandaportman2@hotmail.com
- Updated version of the LEED Study Guide is now available. Approximately 300 guides sold during the Denver Green Building Conference and LEED-NC Workshop. If you are interested in purchasing a copy please contact Frank Sturgell, fsturgell@springsips.com.

Events Committee
vasatkae@ci.boulder.co.us

- The April LEED-NC workshop was a success with a total of 53 registrants. Ashley Muse, Brit Thibodaux and Rachel Petro volunteered for the workshop.
- The Denver Green Building Conference was a success and we were thrilled to support Sustainable Conferences, Inc. who were great to work with.
- Thursday, April 28th Silent Auction was fun and went well. Thanks to all who attended and bid on the items!
- A big thank you to everyone who helped with the silent auction, booth and workshop!

Greenbuild 2006 Committee
mhaughey@earthlink.net

- USGBC Colorado /Citizens Greenbuild 2006 Committee meets on the second Tuesday of the month at the Alliance Center, 1536 Wynkoop St., 3rd Floor Conference Room from 4:00 – 6:00 p.m…all are invited to attend!
- Exemplary Colorado project selected and announced…it will be the 910 Arts
- Greening Colorado Challenge web site is up, spread the word…..www.greeningcolorado.com
- Committee Roles & Responsibilities are posted on the USGBC-Colorado web site. www.usgbc.org/chapters/colorado Click on Committees and look for Greenbuild 2006!

Membership Committee
janet_pogue@gensler.com

- Associate dues at the local level were implemented on April 1st. The Associate dues for the Colorado Chapter are now $65.
- Contact Janet if you are interested in a membership packet.
- Thank you to our new members for their patience joining online and/or waiting for confirmation from national. The database upgrades has slowed the process to a snails pace and we appreciate everyone’s patience and perseverance!
- Membership Update: 135 total members as of May 3, 2005 (including 23 Associates + 24 students)
  - 13 new members joined in April
  - 3 new members joined in March (slow due to new Assoc dues + trouble online)
  - 7 new members joined in February
  - 10 new members joined in January
LEED Update

Making sense of residential green building program soup
by Rachel Reiss, E-Source

Pointing your customers in the right direction towards residential green building guidelines could prove to be a daunting task, because in some locales there are so many programs from which to choose while in others there aren’t any at all.

Two entities—the National Association of Home Builders (NAHB) and the U.S. Green Building Council (USGBC)—recently released or soon will release green home guidelines that could help solve both issues. NAHB released its Model Green Home Building Guidelines for local homebuilder associations that don’t currently have a green building program in their area, while the USGBC is creating its LEED for homes (LEED-H) guidelines to bring a nationally-recognized green-building brand to home-building practices. At first glance the two sets of guidelines might look strikingly similar in that they both contain similar categories of measures, but NAHB aims at helping builders “green” their mainstream practices, while LEED is attempting to raise the bar for green building design.

Many local green building programs, such as Built Green Colorado, have originated from local Home Builder Associations (HBAs). However many local HBAs don’t have the knowledge or resources to develop their own green building guidelines, so NAHB—the umbrella organization for 800 state and local affiliate HBAs—developed these guidelines to serve as a baseline. The NAHB guidelines, released in January 2005, leave it up to local HBAs to determine how strict to make their guidelines, which measures to include, how to make it appropriate for certain climates, how to certify homes as “green”, and how to brand the program. In the case where a local utility, HBA, or municipal green building program already exists, the preexisting program will take precedence over the Model Green Home Building Guidelines.

NAHB’s intent is to act as an information source for its members and to assist mainstream builders with incorporating more green features into their building practices. John Loyer, Construction Codes and Standards Specialist in the Energy and Green Buildings Department at NAHB told us that NAHB wasn’t looking for the best of green building—it wants to help all builders with all home projects. Since NAHB is a trade association that has tremendous leveraging, complicated new technology, constant load monitoring, or much customer effort to achieve significant energy savings. Green building, when done properly, should keep utility rates lower and operating costs down for both the homeowner and the utility. For some utilities, the motivation to encourage green building stems from its interest in meeting conservation standards regulators impose. Second, green building is such a hot trend that it’s a great means for a utility to connect with customers’ interests and provide customer services. And third, utilities are concerned about fuel choice decisions so if they got involved in the development of green building guidelines, they could have influence on a favorable outcome.

One way a utility could participate in LEED-H development is to become a “provider.” A utility could be a LEED-H provider if it already works with raters and other building inspectors. As LEED-H goes into the pilot phase, the USGBC will be looking for providers.

For more information about NAHB, contact John Loyer, Construction Codes and Standards Specialist, Energy and Green Buildings Department, NAHB at 202-266-8303 or joyer@nahb.com or Rich Dooley, Environmental Analyst, NAHB Research Center at 301-249-6242. The Model Green Home Building Guidelines can be found at http://www.nahbrc.org/greenguidelines/. For more information about LEED-H, contact Jim Hackler, LEED for Homes Program Manager, USGBC at 202-587-7182, jhackler@usgbc.org and visit http://www.usgbc.org/.
Legislative Update

Denver Mayor Hickenlooper Launches Sustainable Development Initiative
by Lindy Eichenbaum Lent, Communications Director, Denver Mayor John Hickenlooper

During his keynote address to the 21st Century Smarter Growth Conference on April 19th, Denver Mayor John Hickenlooper announced the creation of the City of Denver’s Sustainable Development Initiative and shared details of some of the Initiative’s preliminary water-related projects.

“Sustainability is a central value of our administration and our community,” Hickenlooper explained. “It requires us to recognize the interconnectedness between the social, economic and environmental impacts of our policies and programs, as we seek to ensure that future generations will enjoy a quality of life characterized by environmental beauty, economic opportunity and resource abundance.”

The Sustainable Development Initiative will focus on three main areas of activity - water, energy, and land use/transportation - because, as Hickenlooper explained, these basic drivers of economic and environmental health offer opportunities for government innovation and leadership. The initiative, which will promote the citywide importance of sustainable practices by convening stakeholder groups, catalyzing new projects and communicating the importance of sustainability for the City and County of Denver, will be led by Beth Conover, who spent the past year-and-a-half as a policy advisor to the Mayor on issues related to parks, planning and public works. Before joining the Hick- enlooper administration, Conover had been the principal and sole proprietor of Headwaters Consulting, LLC since 1998, providing strategic planning, negotiation, program development and fundraising services for natural resource conservation. In this capacity, she was involved with the Cherry Creek Water Quality Regional Agreement, the Mayor’s South Platte River Commission Long-Term Management Framework, as well as other local, regional and statewide initiatives. She previously held positions as the director of parks and environment for the Stapleton Development Corporation, manager of programs and development for the Stapleton Redevelopment Foundation, and grant writer for the Denver Public Library, to name a few.

The Initiative’s first efforts will focus on water. Some preliminary programs include the following:

The Community Conservation Gardens Project involving a youth water corps:
Since more than half of Denver Water’s treated drinking water is used on private landscapes in the summer time, the Denver Department of Parks and Recreation, with help from Denver’s Workforce Development Division, will launch a program this summer to convert four prominent public landscapes to “waterwise” gardens. Through a combination of public and private grants and partnerships, local at-risk youth will participate in creating these gardens, while being trained in job skills for the growing green industry. Locations for the waterwise gardens include the Denver City and County Building, Harvey Park, Highland and Montbello/Parkfield Recreation Centers. The neighboring communities will be engaged in the design and installation of these sites, and site plans, plant lists and other information resources will also be provided to the broader public. Partners include Denver Water, Denver Botanic Gardens, the Gates Family Foundation and the Green Industries of Colorado.

The South Platte Water Quality Initiative:
Denver’s Departments of Public Works and Environmental Health are working together to develop a strategy for reducing pollution levels in the South Platte River through aggressive intervention measures, monitoring, and public education. Staff are targeting problem storm-water outfalls in an effort to reduce the levels of E-Coli in the Denver reach of the river. Over time we will expand our efforts to address other pollutants and to work regionally on a watershed basis to improve water quality in the South Platte.

Public Education and Outreach:
The Mayor’s Office will partner with the Denver Museum of Nature and Science this summer to offer a speaker’s series on the best ideas in Western Water, highlighting local and regional water issues, and bringing in some of the best thinkers from around the region to discuss their programs and possible lessons for our area. We are also engaged in a longer-term effort with the Metro Mayor’s Caucus to develop best management practices for water conservation in the region.

“It is important to realize these are not random actions, but part of a larger citywide program and strategy that benefits all taxpayers,” said Hickenlooper. “We intend to honor the Denver’s environmental record while promoting the ‘triple bottom line’ of the social, economic and environmental benefits of sustainability moving forward.”
Emerging Green Builders Forum

CU Solar Decathlon Team Takes Flight
by Jon Previtali

Architects & Engineers Team Up for Green Gold

Nearly 30 student architects and engineers at the University of Colorado are racing for first place a second time in a row in the National Solar Decathlon competition that will take place this October on the National Mall in Washington, D.C. Sponsored by the National Renewable Energy Laboratory, the Department of Energy and the American Institute of Architects, the Solar Decathlon will promote solar power and energy efficiency by bringing together 18 universities from the United States, Canada, Puerto Rico and Spain to display 800 sf solar-powered homes designed and built by students. As a true decathlon, there will be ten areas of judging from architecture and engineering to energy efficiency and livability. The most difficult challenge for the team will be meeting a standard of comfort and aesthetics equal to or greater than a normal home using no power from the electrical grid or natural gas.

“We spent a lot time using advanced computer simulation tools to optimize the house’s lighting and mechanical systems for efficiency without sacrificing comfort”, says Natalie Mach, master’s student in CU’s Building Systems Program and one of the project’s Energy Consultants.

The University of Colorado won the first National Solar Decathlon competition in 2002 and hosted an estimated 100,000 visitors in their house on the National Mall. The victory brought recognition to the University of Colorado as a leading institution for sustainable building design. This October’s competition promises an even larger turn-out of spectators in D.C. and CU expects to attract a large number of Colorado citizens to the CU campus starting in December to tour the house. The team hopes the house will help build even more momentum for photovoltaic systems in Colorado, where the state demonstrated its popularity via the passing of Amendment 37.

“The competition is important because it shows people — the public, professionals, and engineers — that solar is going to become mainstream,” says Professor Julee Herdt, Assoc. AIA, of the University of Colorado and Architecture Faculty Advisor for the project. “One of the main things we learned from the last competition is that the public is ready for renewable energy design. They’re very curious. There was a huge cross-section of Americans at the Mall to see these houses (in 2002).”

CU’s 2005 Solar Decathlon House

This year, the CU Solar Decathlon home is driven by the team’s five design goals: bio-based materials, modularity, accessibility, innovation, and energy efficiency. Some major features include:

- A revolutionary BIO-Sip wall system built by CU students composed of soy-based polyurethane insulation provided by Friendly Foam of Longmont, CO and fully recycled post-consumer waste paper board. “Sip” is short for Structural Insulated Panel, a pre-fabricated walling system commonly composed of wood and Styrofoam.
- A 6.4 kW photovoltaic (PV) array built with SunPower SPR-200 panels, among the most efficient in the industry, and operated with charge controllers and inverters donated by Outback.
- A building integrated photovoltaic (BIPV) array to serve as a shading device.
- Evacuated-tube solar thermal collectors from Thermomax Industries that will supply domestic hot water and space heating via a radiant flooring system provided by Warmboard.
Emerging Green Builders Forum

CU Solar Decathlon Team Takes Flight
Continued

• A highly insulated building envelope with high-performance heat-mirror windows.
• An energy recovery ventilator (ERV) to provide efficient ventilation for the occupants.
• High-efficiency, ductless air conditioning units.
• The use of as little energy in the construction as possible by leveraging “bio-based” and recycled building materials.

To ease transport to Washington, D.C., the house will be built on a 57’ x 14’ mobile home chassis donated by Genesis Homes of Colorado and Summit Crest. Consistent with the team’s desire to use bio-based materials, the truck towing the home will be run entirely on bio-diesel.

Starting at the end of May, students will build the house in the parking lot of the Home Depot in Louisville. After commissioning the building, the home will be towed to the National Mall. Then, after the competition, the home will be freighted back to Colorado and installed on the CU campus for touring by students and the public. Following a year on the CU Campus, the home will be occupied permanently.

“It’s great to see design goals and construction methods that fit right in with my aspirations for a sustainable future. I’m thrilled to be involved in this project,” says Drew Bailey, recent graduate in Environmental Studies and Construction Manager for the project.

Pushing the Green Envelope Collaboratively

The challenge of combining energy efficiency with high-quality architecture has required a close working relationship between architects and engineers. The team is blurring the boundaries between their traditional roles to build a Solar Decathlon home in which aesthetics and technology drive one another in a supportive, well-integrated manner.

“The industry needs a renovation so the design-build process evolves into a cooperative solution and produces designs that meet high standards of green architecture and also meet builders on their terms”, says Mark Cruz, Lead Architect and senior in the College of Architecture and Planning at CU Boulder.

CU’s team kicked off the project in fall 2003 with the Shoebox Cabana Charette. A charette is an exercise in which architects and engineers work vigorously within a short amount of time to come up with design solutions. A collection of mixed architecture and engineering groups had two hours to design a passive solar home using a shoebox plus a range of found “bio-based” materials such as paper, rice cakes, straw, grasses and cornstarch packaging. A control group used petroleum-based Styrofoam and plastics. The Shoebox Cabanas were placed in the sun for one hour with internal temperature probes. Measurements concluded that the Rice Cake Cabana was the most energy efficient with the Styrofoam Cabana coming in second.

“One of the unexpected pleasures of this project is seeing the engineering and architecture students working together,” says Mike Brandemuehl, Associate Professor of Civil, Environmental and Architectural Engineering and the project’s Engineering Faculty Advisor. “It is never too early to start dismantling the barriers between the professions.”

Then, in June of 2004, the team had the opportunity to engage in a design charette with architect Andreas Duany, members of the Prospect New Town architectural team, the Home Builder’s Association of Metro Denver and members of the general public at Prospect New Town in Longmont, CO. This charette proved to be extremely influential in shaping the future of CU’s house design.

Bio-based Materials: Students Could Eat the Building

Building materials for the CU Solar Decathlon Home read like a health food menu. They include soy, wheat, corn, flax, sunflower, canola, coconut, and coffee, to name a few. Described as “bio-based”, these materials are produced from plant fibers including agricultural and forestry by-products, and wastepaper. CU’s intention is to demonstrate that bio-based materials are good replacements for many petroleum-based building products, protect indoor air quality, and contribute to a cleaner environment and stronger U.S. economy.


CU’s Team is collaborating with the U.S.
Emerging Green Builders Forum

CU Solar Decathlon Team Takes Flight

Continued

Department of Agriculture, Forest Products Laboratory, Madison, Wisconsin on a patented structural insulated panel system from wastepaper and soy-based insulating foam. The system, called “BIO-Sips”, is based on research by Prof. Julee Herdt at CU. In March, the team tested the BIO-Sip prototypes in the CU structural lab. The BIO-Sip panel assemblies surpassed structural requirements for both shear and compression tests, enabling the CU Team to use them as load-bearing members in their wall construction.

“We were very pleased with their performance in the lab”, says Kristin Field, master’s student in CU’s Building Systems Program and Structural Test Coordinator, “we’re hopeful that our results could lead to bigger and better things for the BIO-Sips.”

Momentum for Green Design at CU

The Solar Decathlon project is a product of the rising tide of environmentalism at CU and among local and national businesses. In April, CU students put their money where their mouths are and passed a fee initiative in the student election that will collect money over the coming years to ensure there is funding for the 2008 Solar Decathlon competition. This year over half of the projects funding comes from grants and in-kind donations from businesses. And, the CU Administration, College of Architecture & Planning, and College of Engineering & Applied Science have also provided funding to continue to round out education in green design and keep pace with student needs and the industry.

“Student interest in sustainable building design continues to grow, both in architecture and engineering. The Solar Decathlon project allows them to leverage wide-eyed enthusiasm and academic coursework into marketable experience”, says Prof. Mike Brandemuehl.

The 2005 CU Solar Decathlon team is still seeking corporate and individual sponsors. For more information, please contact Jeff Lyng, lyng@colorado.edu or 303.818.2302.

CSU Hosts Kristi Ennis

by Ed van Deventer

On March 22nd, 2005 CSU students involved in the Construction Management and Interior Design programs were given the distinct pleasure of hosting speaker Kristi Ennis.

Ms. Ennis is the Design Director at Boulder Associates. Kristi is LEED certified and has been involved in distinguished projects such as Boulder Community Hospital, the first LEED certified hospital in the United States. Green building is becoming increasingly important with construction in the U.S. consuming 25 – 40% of municipal solid waste. Ms. Ennis outlined a variety of techniques and materials to aid this very problem.

Interestingly enough, some of the most effective methods for sustainability are the most obvious. Paying a great deal of attention to aesthetics is one of these methods. Future generations are less likely to tear down and do new construction if they value the aesthetic characteristics of your project. Ms. Ennis also explained that with the use of existing buildings and salvaged materials we can reduce our waste and our reliance on new materials. Another method simply entails the use of less material. This can be accomplished by new framing techniques and reduced finishes.

Kristi Ennis also shared with us a variety of sustainable alternatives. First she brought to our attention that sustainable design can be as simple as using local materials. By doing this we can reduce the pollution associated with material transport and maintain the local vernacular. Ms. Ennis also brought in samples of sustainable materials that rival materials used in the industry for years. Among some of the most interesting was a gridboard made out of wheat that can be used in place of gypsum board, bamboo floors as opposed to old-growth hardwoods, and recycled blue jean material in place of fiber glass insulation.

With the depletion of natural resources and the rising cost of utilities, green building is becoming increasingly important. Although some of these ideas may seem radical now, it is important to learn and become familiar with these techniques in preparation for a better future.

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Chapter Spotlight

Denver Green Building Conference at Belmar
by Elizabeth Vasatka, City of Boulder, Event Committee Chair

As a participant of the Denver Green Building Conference at Belmar, I felt the level of information – and inspiration – was of high-quality and well-received and appreciated. The conference organizers, Sustainable Conferences, worked closely with Mark Falcone, the Founder of Continuum Partners and master developer of Belmar, to make the event a worthwhile experience for the developers, builders, architects, engineers, planners, design professionals, utilities, and government officials in attendance.

While each day was geared toward a specific group of building professionals, all of the main speakers kept us engaged and interested, regardless of the role we play in the building industry.

The conference was set up to expose the entire audience to a keynote address in the morning, followed by concurrent workshops in the afternoon. The conference included a room full of exhibitors, panel discussions, and walking tours. The variety and scope of the talks and discussions were framed by the day.

Kicking off the conference Wednesday morning were opportunities to participate in walking tours focused on Urban Planning and Re-Development, Mixed-Use Commercial Buildings, and Residential Design and Construction.

An all-star cast of keynote speakers was kicked-off on Wednesday afternoon by Bob Berkerbile, who is a leading authority in the field of sustainable design, followed by Alan Whitson, discussing the always popular corporate realty design and the profitability of green.

One of the day’s highlights was a panel discussion of notable leaders who are working locally to create sustainable projects and break down the barriers to success.

Thursday was geared toward designers and architects, with the morning keynote given by the inspirational Ed Mazria, an internationally recognized architect, followed by the incredible Bill Reed’s talk on regenerative design and moving beyond sustainability.

The rest of the day was filled with a panel discussion of private developers discussing sustainable development and its impact on their business practices, and other concurrent workshops.

Thursday evening was filled with great talks by Hillary Mizia from the New Belgium Brewing Company, showcasing an entertaining presentation of the sustainable design initiatives that New Belgium has taken on and its ongoing efforts to achieve sustainability in their brewing organization and culture.

Next we had our own USGBC board members Janet Pogue and Michael Haughey creating interest and excitement for the Chapter and Greenbuild 2006. Janet and Michael provided the audience with a clear and fun understanding of the role of the Chapter and how Greenbuild in Denver will be something everyone will want to be involved with. After the talks, it was time to enjoy a beer, listen to good music, and bid on one of the 40 silent auction items.

The silent auction was organized by the Chapter to raise funds that are otherwise generated by the Chapter’s fall conference. Working in conjunction with Sustainable Conferences in order to support each other’s efforts, the silent auction raised over $3,500 for the Chapter. This money will be used for programs, events, and education opportunities; supporting on-going Denver Greenbuild 2006 planning efforts; and also efforts such as state legislation requiring state-owned and funded buildings to be constructed to a LEED standard.

The final day of the conference focused on the nuts and bolts for builders, with sessions on building science and other technical issues.

If you’ve never heard or experienced Joe Lstiburek, in my opinion he is someone not to miss! His knowledge and expertise work hand-in-hand with his humor to make for an extremely entertaining presentation. Joe makes the indisputable connection between building science, smart building, and sustainable practices.

Excellent technical sessions finished out the day for this three-day conference that was well organized and attended.
Chapter Spotlight

Denver Green Building Conference at Belmar
by Elizabeth Vasatka, City of Boulder, Event Committee Chair

Many businesses supported and helped the Chapter by donating goods and services – not to mention the volunteers who helped make the conference possible. Thanks to all of you:

Adolfson & Peterson Construction
Allegria Spa
Alliance Construction
Aspen Ski Co, Aspen
Associates III, Denver
BuildingGreen.com
Chuck Wells & Associates, Denver
Denver Design Center: John Brooks
Showroom, Denver
Denver Design Center: Kneedler Fauchere, Denver
Ecological Blenders, LLC, Lakewood
Egg & Dart, Denver
Elephant Restaurant, Belmar
FLUE SENTINEL, INC., Orion, MI
Gallum-Snow

GALLUN - SNOW, Denver
Glen Eden
Harrison’s Guest House & Guide Service
Herman Miller, Denver
Hotel Jerome, Aspen
Hutter Wholesale
J. Jill, Belmar
Jamba Juice, Belmar
John Fielder, Denver
John Hames, Springs Bath House, Hot Springs
Johnson Diversity - Butchers
Lee Jofa, Denver
Loretta Hall, Albuquerque
Natural Home & Garden magazine
P.F. Changs China Bistro, Belmar
Platte River Art Services, Inc., Denver
Redstone Inn, Redstone
Ricochet, Belmar
SPECS, Denver
Ted Owens, Corrales
Ted’s Montana Grill, Belmar
The Fall Line, Belmar & Copper Mountain
The Press Coffee Co, Belmar & Westminster
The Rug Source, Denver
Valerie Walsh, Boulder
Vittoria D’Alessio
What’s Working, Boulder
Whole Foods Market, Belmar

Chapter Calendar

<table>
<thead>
<tr>
<th>USGBC-Colorado Evening Program</th>
<th>June 6, 2005</th>
</tr>
</thead>
<tbody>
<tr>
<td>REI, Denver, 1416 Platte Street</td>
<td></td>
</tr>
<tr>
<td><strong>Topic:</strong> Greening Codes: Boulder’s pursuit of sustainable development</td>
<td></td>
</tr>
<tr>
<td><strong>Speaker:</strong> Elizabeth Vasatka and Lauren Denner</td>
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<tr>
<td><a href="http://www.usgbc.org/chapters/colorado">www.usgbc.org/chapters/colorado</a></td>
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<table>
<thead>
<tr>
<th>USGBC-Colorado Evening Program</th>
<th>July 11, 2005</th>
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<tbody>
<tr>
<td>Co-sponsored by the Boulder Green Building Guild</td>
<td></td>
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<tr>
<td>REI, Denver</td>
<td></td>
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<tr>
<td><strong>Topic:</strong> Forest Certification and the Forest Stewardship Council</td>
<td></td>
</tr>
<tr>
<td><strong>Speaker:</strong> Terry Campbell, Forest Product Solutions, Portland, OR</td>
<td></td>
</tr>
<tr>
<td><strong>Sponsors:</strong> New World Millworks, Austin Hardwoods, Swinerton Builders</td>
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<tr>
<td><a href="http://www.usgbc.org/chapters/colorado">www.usgbc.org/chapters/colorado</a></td>
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<thead>
<tr>
<th>USGBC-Colorado Evening Program</th>
<th>August 1, 2005</th>
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<tbody>
<tr>
<td>REI, Denver, 1416 Platte Street</td>
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<tr>
<td><strong>Topic:</strong> Emerging Technologies in High Performance Windows</td>
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<tr>
<td><strong>Speaker:</strong> Robert Clarke, Alpine Glass</td>
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<tr>
<td><a href="http://www.usgbc.org/chapters/colorado">www.usgbc.org/chapters/colorado</a></td>
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</tbody>
</table>

Contact committee chairs for individual committee meeting schedules.

June Evening Program

Greening Codes: Boulder

Speakers:
*Lauren Yarmuth Denner,* Principal of DOMANI
*Elizabeth Vasatka,* Environmental Coordinator for the City of Boulder

This presentation will look at how municipalities can be leaders in supporting and transforming the built environment towards high performance. The City of Boulder continues to be a leader in this regard. Most recently Boulder conducted a comprehensive review of internal commercial building codes in comparison to the LEED Rating System.
# Colorado LEED Projects

## Certified Projects

<table>
<thead>
<tr>
<th>BUILDING</th>
<th>CITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sundeck Restaurant (1.0 Bronze)</td>
<td>Aspen</td>
</tr>
<tr>
<td>CH2M Hill South Building (2.0 Certified)</td>
<td>Englewood</td>
</tr>
<tr>
<td>CH2M Hill West Building (2.0 Certified)</td>
<td>Englewood</td>
</tr>
<tr>
<td>CH2M Hill North Building (2.0 Certified)</td>
<td>Englewood</td>
</tr>
<tr>
<td>North Boulder Recreation Center (2.0 Silver)</td>
<td>Boulder</td>
</tr>
<tr>
<td>Boulder Community Hospital (2.0 Silver)</td>
<td>Lakewood</td>
</tr>
<tr>
<td>U.S. Department of Transportation (2.0 Silver)</td>
<td>Denver</td>
</tr>
<tr>
<td>Denver Place (LEED-EB 1.0 Gold)</td>
<td>Colorado Springs</td>
</tr>
<tr>
<td>Russell T. Tutt Science Center</td>
<td>Aspen</td>
</tr>
<tr>
<td>Snowmass Golf Clubhouse</td>
<td></td>
</tr>
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## Registered Projects

<table>
<thead>
<tr>
<th>BUILDING</th>
<th>CITY</th>
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</thead>
<tbody>
<tr>
<td>Academy of Charter Schools</td>
<td>Westminster</td>
</tr>
<tr>
<td>Alfred A. Araj Courthouse</td>
<td>Denver</td>
</tr>
<tr>
<td>Alliance Center</td>
<td>Denver</td>
</tr>
<tr>
<td>Alliance for Technology, Learning and Society</td>
<td>Denver</td>
</tr>
<tr>
<td>Belmar 2M3</td>
<td>Aurora</td>
</tr>
<tr>
<td>Belmar Development - Block 5</td>
<td>Aurora</td>
</tr>
<tr>
<td>Buckley Associates Offices</td>
<td>Aurora</td>
</tr>
<tr>
<td>Buckley Army Aviation Support Facility</td>
<td>Aurora</td>
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<tr>
<td>Byron G. Rogers U.S. Courthouse</td>
<td>Aurora</td>
</tr>
<tr>
<td>City of Fort Collins Vehicle Storage</td>
<td>Aurora</td>
</tr>
<tr>
<td>College of Law - University of Denver</td>
<td>Aurora</td>
</tr>
<tr>
<td>Colorado Mountain College - Eagle River</td>
<td>Aurora</td>
</tr>
<tr>
<td>Valley Academic Center</td>
<td>Aurora</td>
</tr>
<tr>
<td>Colorado Springs Utilities Laboratory</td>
<td>Aurora</td>
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<tr>
<td>CU-Denver’s Sustainable Youth Zone</td>
<td>Aurora</td>
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<tr>
<td>Denver Health - Far Western Addition</td>
<td>Aurora</td>
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<tr>
<td>Donovan Park Facility</td>
<td>Aurora</td>
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<tr>
<td>DTJ Design Office Expansion</td>
<td>Aurora</td>
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<tr>
<td>Durango Discovery Museum</td>
<td>Aurora</td>
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<tr>
<td>EPA Region 8 Headquarters</td>
<td>Aurora</td>
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<tr>
<td>Fossil Ridge High School</td>
<td>Aurora</td>
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<tr>
<td>Green Classrooms of Guggenheim Hall</td>
<td>Aurora</td>
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<tr>
<td>Larimer County Courthouse Offices</td>
<td>Aurora</td>
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<tr>
<td>ME Engineering Office Building</td>
<td>Aurora</td>
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<tr>
<td>Medical Center of the Rockies</td>
<td>Aurora</td>
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<tr>
<td>Mesa Development Center</td>
<td>Aurora</td>
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<tr>
<td>New Belgium Brewery</td>
<td>Aurora</td>
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<tr>
<td>Northfield at Stapleton</td>
<td>Aurora</td>
</tr>
<tr>
<td>NREL Thermal Test Facility</td>
<td>Aurora</td>
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<tr>
<td>Pikes Peak Regional Development Center</td>
<td>Aurora</td>
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<tr>
<td>Pioneer School for Expeditionary Learning</td>
<td>Aurora</td>
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<tr>
<td>Porter Industries Building</td>
<td>Aurora</td>
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<tr>
<td>ProLogis</td>
<td>Aurora</td>
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<tr>
<td>Raytheon S-76</td>
<td>Aurora</td>
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<tr>
<td>Science and Technology Center - NREL</td>
<td>Aurora</td>
</tr>
<tr>
<td>Snowmass Base Village Retail</td>
<td>Aurora</td>
</tr>
<tr>
<td>State of CO Dept. of Labor Addition</td>
<td>Aurora</td>
</tr>
<tr>
<td>Summit County MRF &amp; Maintenance Garage</td>
<td>Aurora</td>
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<tr>
<td>The Children’s Hospital at Fitzsimons</td>
<td>Aurora</td>
</tr>
<tr>
<td>Thunder River Theatre</td>
<td>Aurora</td>
</tr>
<tr>
<td>University of Colorado Memorial Center Addition</td>
<td>Boulder</td>
</tr>
<tr>
<td>Vail Christian High School - Eagle River</td>
<td>Edwards</td>
</tr>
<tr>
<td>Wolf Law Building - University of Colorado</td>
<td>Edwards</td>
</tr>
</tbody>
</table>

* New!
Get Involved!

Join a Committee

The USGBC Colorado Chapter needs your help to create high-quality educational programs, events and communications to take the Chapter to the next level. We have established a number of committees that meet monthly to provide direction and input to the Board of Directors and help advance the goals of the Chapter. If you are interested in participating, please contact the appropriate committee chair listed below:

<table>
<thead>
<tr>
<th>Committee</th>
<th>Chair</th>
<th>E-Mail</th>
</tr>
</thead>
<tbody>
<tr>
<td>Collaboration</td>
<td>Kristi Ennis</td>
<td><a href="mailto:kennis@boulderassociates.com">kennis@boulderassociates.com</a></td>
</tr>
<tr>
<td>Communications</td>
<td>Tom Hootman</td>
<td><a href="mailto:tom.hootman@rnldesign.com">tom.hootman@rnldesign.com</a></td>
</tr>
<tr>
<td>Education</td>
<td>Lauren Denner</td>
<td><a href="mailto:lauren.denner@domani-llc.com">lauren.denner@domani-llc.com</a></td>
</tr>
<tr>
<td>Events</td>
<td>Elizabeth Vasatka</td>
<td><a href="mailto:VasatkaE@ci.boulder.co.us">VasatkaE@ci.boulder.co.us</a></td>
</tr>
<tr>
<td>Finance</td>
<td>Carol Blaha</td>
<td><a href="mailto:cblaha1219@aol.com">cblaha1219@aol.com</a></td>
</tr>
<tr>
<td>Greenbuild 2006</td>
<td>Michael Haughey</td>
<td><a href="mailto:mhaughey@earthlink.net">mhaughey@earthlink.net</a></td>
</tr>
<tr>
<td>Membership</td>
<td>Janet Pogue</td>
<td><a href="mailto:janet_pogue@gensler.com">janet_pogue@gensler.com</a></td>
</tr>
<tr>
<td>Programs</td>
<td>Michael Haughey</td>
<td><a href="mailto:mhaughey@earthlink.net">mhaughey@earthlink.net</a></td>
</tr>
</tbody>
</table>

Learn more about Chapter committees by following the “committees” link on our Chapter website at www.usgbc.org/chapters/colorado. If you have additional questions, feel free to contact any of the committee chairs listed above or the President of the Board, Annette Stelmack, at annette@associates3.com.

Sponsors

Your 100% volunteer staff has been working hard and long to see this goal of a local Colorado USGBC chapter. Your donation helps green building move from innovative idea to factual reality. Much more is needed to meet our goal. Support from our members and sponsors will enable us to expand current programming while developing additional funding (including grant) opportunities.

Thank you to these sponsors for in-kind donations during April!

USGBC Colorado Chapter Sponsors

Gensler