

# Sustainable BUILDING



## Building Green

### The University of Denver College of Law

**In addition to having one of the top environmental law programs in the United States, the University of Denver College of Law now has a building that demonstrates the institution 'practices what it preaches' when it comes to concern for the environment. Built on the front range of the Colorado Rocky Mountains, the 181,000 square foot, \$63 million facility which opened in August will be the first certified "green" law school in the country. Don C. Smith, U.S. Correspondent explains the attributes that distinguish the building from conventional ones.**

What is remarkable about the University of Denver College of Law (DUCOL) building is that a concerted effort was made at every step of the planning and construction process to put the building on track to earn certification from the U.S. Green Building Council's "Leadership in Energy & Environmental Design" (LEED) program (*see text box*).

The decision to build the first green U.S. law school was particularly noteworthy given the fact that natural resources law has been taught at DUCOL for more than 100 years. Thus, at the outset three key objectives were identified:

- Making the building safe for its occupants;
- Making the building safe for the environment;
- Building a facility that would include the best "smart technology" available.

## Walking the walk

Environmental law professor George (Rock) Pring said the building was aimed at more than making a statement about green buildings. "We are a teaching institution and through the planning and construction of this building, we had a wonderful opportunity to teach what we preach." Prof. Pring, who was a faculty member of the college's building committee, said, "This experience allows us to educate our students about how they, as professionals, can encourage clients and partners to really promote sustainable development. Additionally, the ripple effects go far beyond our students to, for example, some of the suppliers who worked on this project."

The road to the green building was not always entirely clear, however, as Prof. Pring pointed out. "Early in the process, the question came up, 'Are we going to build a green building?' I was caught somewhat flat-footed as an environmental law professor since it wasn't something I had thought much about but it seemed to make such good sense. In order to consider this more carefully, I had to do some research

on what it was all about." Prof. Pring quickly learned two things: first, "green building" is just "good building;" and second, a green building can be built without being hugely expensive. He figures that the total cost to make the building green was perhaps as little as one percent more than it would have been otherwise. On the other hand, he pointed out that by designing the building with the environment in mind, many cost-savings were simply made part of the overall design.

The first major decision was the hiring of Denver-based H+L Architects. Their objective was to get the law school into its new facility in a short 32-month period. Not long thereafter, H+L hired the premier academic design firm Shepley Bulfinch Richardson & Abbott of Boston. Subsequently, a second firm, ENSAR Group of Boulder, Colorado, was hired as the sustainable design consultant, which included LEED consulting/coordination.

## Administration support

As the planning phase began to unfold, the university's administration provided support for the effort to build green. Chancellor Dan Ritchie, who said the building should last several hundred years rather than being a disposable facility like many other academic buildings, said, "It's the right thing to do." Law Dean Mary Ricketson echoed his sentiments and said "go for green." University architect emeritus Cab Childress added, "Good architecture is green architecture."

Jason Hainline, who was involved with the project as a designer for ENSAR Group, said there were at least four fundamental reasons that building green made sense. First, for many projects building green and achieving LEED certification is a marketing tool which "can be a competitive advantage." In this regard, Dean Ricketson told *The Denver (Colorado) Post*, "I think the building itself is a selling point" in terms of attracting the best students. Second, LEED certification provides quantifiable evidence of the high



quality of a building. Third, "meeting or exceeding the LEED minimum energy requirements can also help to ensure a higher level of energy performance, which translates to long-term energy cost saving," Mr. Hainline said. Finally, "meeting or exceeding the LEED [indoor air quality] requirements also translates to improved worker productivity, health and wellbeing, which also anecdotally translates to [an] improved bottom line," he said.

Among the key aspects of the DUCOL building are:

- Forty percent less energy used than a standard comparably sized and fully code-compliant building. Three of the ways this target is achieved are: using "light harvesting" in the library where electric light intensity goes up and down depending on the outside light; using infrared water faucet fixtures to reduce hot water wastage; and installing high-thermal "performance walls," windows, and roof.
- Forty percent savings in water consumption compared to a similar building;
- Many building materials were obtained locally (e.g., bricks and steel), thus reducing the need for energy-intensive transport;
- The use of recycled materials for the copper roof, carpets, and ceilings;
- The purchase of 830 MW/h of wind power;
- Large windows that open;
- The purchase of furniture and systems only from manufacturers who demonstrated acceptable environmental, health, and safety policies regarding recycled and certified raw materials;
- Seventy-five percent of construction waste was recycled.

## LEED standards

University of Denver in-house architect Mark Rodgers pointed out that the effort to achieve LEED accreditation also led the university to make some additional green changes. For example, CFC's in the main chiller were changed out as a result of the law school project. In addition, campus lighting has been changed to reduce light pollution. "In many ways, what is most exciting is that the LEED standards will push us to do better, and this is what an academic institution should do," Mr. Rodgers said adding, "We used a process that has made our law school significantly better; we would encourage others in a comparable position to consider a similar process."

Despite the benefits of following the LEED's program at the DUCOL, Mr. Rodgers pointed out that there remain some stumbling blocks-particularly in terms of project financing-associated with adopting LEED standards. "Even when architects and builders know it's good, people like Fannie Mae [which operates under a congressional charter that directs it to increase the availability and affordability of homeownership for low-, moderate-, and middle-income Americans], who do the funding for projects, need to be able to point to a cash flow that establishes if the building is built to LEED standards it will stay rented in a downturn," he said. "This means that a larger construction loan, if needed, is warranted in Fannie Mae's eyes."

## The LEED Program

The U.S. Green Building Council (USGBC), founder of the Leadership in Energy & Environmental Design (LEED) program, is the United States' foremost coalition of building industry representatives working to promote buildings that are environmentally responsible, profitable, and healthy places to live and work. The organization's purpose is to integrate building industry sectors, lead market transformation, and educate owners and practitioners. Created by the USGBC in 1994, the LEED program was developed largely in response to major environmental impacts associated with buildings. This was particularly important in the context of building energy usage. For instance 65.2 percent of total U.S. electricity consumption is associated with buildings. This results in 30 percent of total U.S. greenhouse gas emissions.

Jason Hainline, a designer with ENSAR Group, explained, "The [LEED] committee consists of product manufacturers, architects, engineers, environmental groups, building owners, utilities, state and local governments, research institutions, professional societies and colleges and universities." The underpinnings of the LEED "Green Building Rating System" are "accepted energy and environmental principles [that strike] a reasonable balance between known effective practices and emerging concepts," Mr. Hainline said.

The three "C's" of the LEED's program include: (1) criteria for every step in design and construction; (2) credits earned for satisfying the criteria; and (3) certification awarded on the basis of total credits earned.

There were six LEED categories that the University of Denver College of Law took into consideration in the planning, development, and construction of its new building:

- Sustainable Sites: the law school was built on a former parking lot and is within 300 meters of a future light-rail station.
- Water Efficiency: natural groundwater, rather than chemically-treated city water, will be captured and used for landscaping.
- Energy and Atmosphere: the building will use 40 percent less energy than a comparably sized building and there are bicycle racks and electric vehicle charging stations.
- Materials and Resources: a significant portion of building materials came from the local area, thus lessening transport costs.
- Indoor Environmental Quality: a carbon dioxide monitoring system has been installed along with the use of low-emitting paints and composite wood.
- Innovation and Design Process: a LEED accredited professional was used in the development and construction process.

The DUCOL has registered for certification and is likely to submit the formal application before the end of 2004.

More information about the LEED program can be found at: [http://www.usgbc.org/Docs/About/usgbc\\_intro.ppt](http://www.usgbc.org/Docs/About/usgbc_intro.ppt).

## A leading question

In the end, the two "safety factors" - a building that is safe for occupants as well as the environment - proved a persuasive combination in Prof. Pring's eyes. "When you ask whether you should achieve both, you simply have to answer yes," Prof. Pring explained noting the effective use of a favourite tactic of good lawyers; asking a leading question to which there is only one answer.

### Further information:

- ENSAR Group: [www.ensargroup.com](http://www.ensargroup.com)
- H+L Architects: [www.hlarch.com](http://www.hlarch.com)
- Leadership in Energy and Environmental Design: [www.usgbc.org/LEED/leed\\_main.asp](http://www.usgbc.org/LEED/leed_main.asp)
- Shepley Bulfinch Richardson and Abbott: [www.sbra.com](http://www.sbra.com)
- University of Denver College of Law: [www.law.du.edu/secondcenturycampaign/green.html](http://www.law.du.edu/secondcenturycampaign/green.html)