

# Building Green: The University of Denver Ricketson Law Building



Sarah Showalter  
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Nestled in the city of Denver since 1864, the University of Denver (DU) is an urban campus that has grown and reinvented itself in the past decade. The bout of new construction that started on campus in the 1990s follows an important goal: making buildings that will last for centuries. To fulfill this goal for longevity, the University has incorporated sustainable design into many of its new buildings. Perhaps most popular is the new law school (known as the Ricketson Law Building), the first LEED accredited structure in the state of Colorado to receive a gold rating. Completed in 2005, the Ricketson law building is an interesting case study for the LEED program. It illustrates green components common to LEED rated buildings, yet also highlights how the LEED scoring system may not always coincide with the needs or goals of green designers and building owners. In this paper, I will summarize the green features of Ricketson, as well as some of the not-so-green aspects. Finally, I will discuss a few drawbacks of the LEED program in the context of campus construction.

### **Part 1: Green vs. Non-Green Features and LEED Rating**

This portion of the paper will outline the green elements that allowed Ricketson to achieve a LEED gold score of 39 total points. I will also highlight the absence of sustainable features, and discuss why some green options were not pursued.<sup>1</sup>

#### ***Sustainable Sites (Score: 8 out of 14 points)***

Because DU is an urban campus located near bus stops and a new lightrail station (to open in November 2007), Ricketson easily fulfilled LEED requirements for alternative transportation options. The University also included four electric car charging outlets in the parking garage and bike storage and changing rooms on site. Other sustainable features of the site include the use of high-albedo landscaping materials, which diminish the heat island effect, and reduced light pollution through special exterior lighting.

Although the site incorporates non-roof components to combat the heat island effect, it does not have a cooling roof. Instead, the University elected to top Ricketson with copper. Pitched copper roofs are required on all new campus buildings by DU's materials guidelines due to durability; copper does not need to be replaced and is easy to repair. The University considered a green or high-albedo white roof, but

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<sup>1</sup> Most of my information on the Ricketson law building came from a profile of the project by the Colorado Chapter of the U.S. Green Building Council (found at <http://www.usgbc.org/chapters/colorado/docs/pdf/CBG-Nov-Dec2005.pdf>) and discussions with the University Architect, Mark Rodgers, AIA via email and phone.

ultimately elected to forfeit LEED points and use copper instead. Copper best meets the University's goal to create buildings that will last for centuries, and it has benefits that the materials needed for a white roof do not. According to University Architect Mark Rodgers:

*What we found on the Law School project was that 95% of the copper sheet we used had already been recycled at least once, and it is 100% recyclable. Eventually (a few hundred years) it will turn the pale green and thereby reduce its heat island effect. Most white roofs are plastic/rubber membranes which require much more maintenance and result in eventual landfill.<sup>2</sup>*

While a green roof would probably have been the best option for Ricketson (especially in terms of water management), Mr. Rodgers makes a convincing argument for the merits of copper vs. a white roof. In the end, the building did receive a point from LEED in the innovation category for the use of copper.

Finally, Ricketson did not score well on sustainability criteria related to site location. The school was built near existing urban infrastructure, an important factor that did earn one LEED point. But in terms of density, urban redevelopment, and brownfield redevelopment, the law building does not have much to offer. In many respects, this is because the site is on an existing campus with very limited site options, a topic that will be discussed in further detail in Part II.

### ***Water Efficiency (4 out of 5 points)***

Ricketson contains several water-saving and reuse features. In terms of reuse, there is a cistern below the building that collects groundwater and water from downspouts, which is then used for irrigation of the site's primarily native plantings. Interestingly, Colorado water law prohibits property owners from reusing stormwater on-site.<sup>3</sup> DU, however, has existed longer than the state and therefore faculty of the law school were able to challenge the law and secure their right for more than one use of water.

Although the site recycles groundwater for irrigation, there is no greywater recycling within the building. Instead, the University focused on water reduction. All bathrooms have infrared light faucets and waterless urinals (in male bathrooms), which

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<sup>2</sup> Interview by author of University Architect Mike Rodgers, AIA, October 17, 2006.

<sup>3</sup> According to Mr. Rodgers, this law stems from the concern in rural areas that farmers upstream from other farms could trap rainwater on site during droughts, thereby monopolizing the water supply. The DU law school, which is well known for its environmental and water law programs, is currently working with the state to revise the statute in light of the environmental benefits of on-site water reuse.

reduce water usage by 39%.<sup>4</sup> There was some skepticism about the waterless urinals, and the state's plumbing inspector gave the University a difficult time before approving their installation. In the end, however, users are happy with the outcome. I know a male law student at DU who said he has heard no complaints, an observation confirmed by Mr. Rodgers.

***Energy and Atmosphere (Score: 8 out of 17 points)***

Ricketson contains many features that enhance energy efficiency, ultimately reducing energy use by 40%.<sup>5</sup> First, the windows are made of low-emitting (low-e) glass, which prevents the loss of heat from the building. The primary building material, brick, also reduces energy costs since it helps warm the building in the winter and cool it during the summer.



Light harvesting: large windows on walls and the ceiling allow ample natural light into the building, thereby reducing the need for electric lighting. Source: H + Architecture ([www.hlarch.com](http://www.hlarch.com))

Designers of the building placed particular emphasis on natural light harvesting so as to decrease the need for electric lighting. The core of the building is a 4-story atrium, and most classrooms and the library have large exterior windows that allow daylight to penetrate rooms. This is a particularly useful method in a climate like Denver's, where the sun shines nearly 300 days a year. Ricketson also has lighting sensors, found primarily in the library, which automatically dim lights if there is enough natural light filling a room.

While Ricketson is adept at increasing energy efficiency, it is lacking in terms of renewable energy sources. Mr. Rodgers said that his office considered the use of photovoltaic (PV) panels, but, in his words "its impact relative to capital investment did

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<sup>4</sup> H + L Architecture: [http://www.hlarch.com/higher\\_ed/portfolio\\_du.html](http://www.hlarch.com/higher_ed/portfolio_du.html)

<sup>5</sup> H + L Architecture: [http://www.hlarch.com/higher\\_ed/portfolio\\_du.html](http://www.hlarch.com/higher_ed/portfolio_du.html)

not look very promising.”<sup>6</sup> Although there is little to promote renewable energy on site, the building did receive a point in the “green power” category since it engaged in a two-year contract with the Center for Resource Solutions (CRS) to purchase power generated from renewable sources, including solar, wind, and geothermal sources.<sup>7</sup> Mr. Rodgers states that the University plans to renegotiate the contract at the end of its term and use renewable sources long-term. Even more exciting, DU is currently discussing plans with two other Colorado universities to purchase its own wind farm.<sup>8</sup>

***Materials and Resources (Score: 5 out of 13 points)***

The law building scored rather low in this category, primarily because it did not reuse an existing building or shell of a building. Before the construction of Ricketson, the DU law school was located on a smaller campus in another part of Denver. When the University decided to move the law school to its main campus, site choices were quite limited. There were no unused buildings that could be rehabbed or retrofitted to house the law school. This is one case, then, where the LEED scoring system does not align well with the nature of campus construction.

Even though Ricketson was built from scratch, the University did make sure to use environmentally sensitive materials. 80% of the materials in the building are recycled, including student lockers (made of compressed straw) and the copper roof. Moreover, almost 100% of the materials are recyclable.<sup>9</sup> DU also ensured that more than half of the waste generated from construction was either salvaged or recycled. Building scraps, such as gypsum board, copper, and masonry, were recycled by the contractor. In addition, the asphalt parking lot that once covered the site was reused to help pave streets in the area.<sup>10</sup>

The materials that compose Ricketson also contribute to sustainability since most were produced locally. Brick, the primary material, is easy to find in Colorado due to large deposits of clay in the state’s soil. Another locally produced material found in the building is gypsum board, made in Gypsum, Colorado.

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<sup>6</sup> Interview by author of University Architect Mike Rodgers, AIA, October 17, 2006.

<sup>7</sup> *Colorado Building Green*, USGBC Colorado Chapter, p. 3. (<http://www.usgbc.org/chapters/colorado/docs/pdf/CBG-Nov-Dec2005.pdf>)

<sup>8</sup> Interview by author of University Architect Mike Rodgers, AIA, October 17, 2006.

<sup>9</sup> *Colorado Building Green*, USGBC Colorado Chapter, p. 3.

<sup>10</sup> Interview by author of University Architect Mike Rodgers, AIA, October 17, 2006.

***Indoor Environmental Quality (Score: 9 out of 15 points)***

One primary way that the University promoted indoor air quality (IAQ) in Ricketson was through an IAQ construction management plan. During construction, the contractor protected all ducts and permeable materials from contamination. Additionally, the construction schedule included time set aside for “off-gassing” of materials.<sup>11</sup> Within Ricketson, all adhesives, sealants, coating, carpeting and wood emit little to no VOCs.

Interestingly, the University had to give up one point in the low emitting paint category because it decided to use regular paint on door frames. According to Mr. Rodgers, this was because the low-VOC paint required reapplication every few years and “it was determined we would do less harm using our standard metal paint formulation fewer times for such critical wear areas than having to expend money, time, and paint to re-painting too often.”<sup>12</sup> The final method for improving IAQ within Ricketson is increased ventilation through operable windows, found in all classrooms and offices.

***Innovation and Design Process (Score: 5 out of 5 points)***

Without the innovation category, Ricketson would not have enough points to qualify as a gold building. One point came from the University’s commitment to building longevity, as exemplified by the copper roof. Another point results from the fact that Ricketson helped improve outdoor lighting efficiency for the entire campus; the LEED approved outdoor fixture developed for the building has now become a



Exterior lighting: Ricketson helped DU develop a new, more efficient standard for exterior lighting through the LEED process. Source: H + L Architecture: [www.hlarch.com](http://www.hlarch.com)

<sup>11</sup> *Colorado Building Green*, USGBC Colorado Chapter, p. 3.

<sup>12</sup> Interview by author of University Architect Mike Rodgers, AIA, October 17, 2006.

campus standard.<sup>13</sup> Other innovative features include an educational program (tours of the building, etc) and low-emitting furniture.

## **Part II: Evaluating LEED and its Applicability to Campuses**

Many people familiar with the LEED rating system know that it was targeted toward commercial office buildings. For this reason, it can be difficult to apply the program successfully to other types of structures. In the instance of campuses (including universities, medical campuses, etc), one large issue relates to site suitability. As mentioned in the first section, Ricketson lost several LEED points since site possibilities were so limited. LEED is also challenging to apply to large campuses with common ownership since so many buildings share energy resources. In the case of Ricketson, DU decided it was more sensible to direct funds toward improving its Central Plant (which produces chilled water and steam for heating and cooling buildings), rather than adding PV panels to Ricketson.<sup>14</sup> As a result, it lost LEED points.

Fortunately, USGBC is working on developing LEED standards specific to campuses. In the meantime, colleges and universities like DU are likely to build green and pursue LEED ratings even without a specialized scoring system. As argued by Mr. Rodgers, universities lend themselves to sustainable design since they have such an interest in building longevity. Although Ricketson was DU's first LEED rated building, most of its features were ones the University would have included anyway. Striving to attain a high LEED score, however, was advantageous for DU. Not only did it improve the green features of Ricketson (bringing new elements to campus such as waterless urinals), but it provided great publicity for the law school and university as a whole. For this reason, DU is pursuing more LEED rated construction and rehab – next on the agenda is a building extension that is intended to score platinum.

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<sup>13</sup> *Colorado Building Green*, USGBC Colorado Chapter, p. 4.

<sup>14</sup> Interview by author of University Architect Mike Rodgers, AIA, October 17, 2006.

## Sources

- 1) ArchiTech online magazine:  
<http://www.architechmag.com/Articles/detailArchitech.asp?ArticleID=2730>
- 2) *Colorado Building Green*, USGBC Colorado Chapter, p. 3.  
(<http://www.usgbc.org/chapters/colorado/docs/pdf/CBG-Nov-Dec2005.pdf>)
- 3) H + L Architecture: [http://www.hlarch.com/higher\\_ed/portfolio\\_du.html](http://www.hlarch.com/higher_ed/portfolio_du.html)
- 4) Interview by author of University Architect Mike Rodgers, AIA, October 17, 2006
- 5) University of DU Law School website:  
<http://www.law.du.edu/news/story.cfm?ID=56>