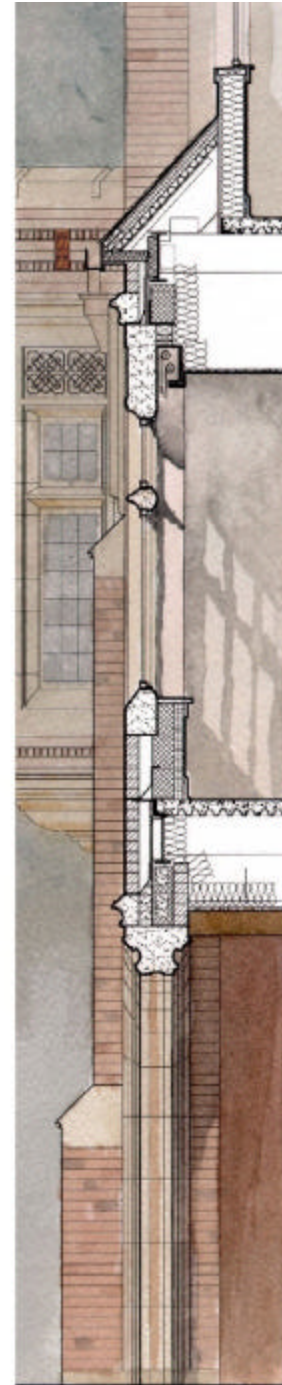




SMBW ARCHITECTS  
 1329 E. CARY STREET, 3RD FLOOR  
 RICHMOND, VIRGINIA 23219  
 (804) 782-2115  
 WWW.SMBW.COM

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WEINSTEIN HALL  
 UNIVERSITY OF RICHMOND



# Association of University Architects

## 2003 Case Study Awards Program

### Weinstein Hall – “To LEED or not LEED”

#### Submitted by:

Andrew S. McBride, A.I.A.  
University Architect  
University of Richmond

#### Background:

The LEED (Leadership in Energy and Environmental Design) rating system from the U.S. Green Building Council (USGBC), which objectively measures and validates the sustainability or “greenness” of buildings, is a very hot topic among universities. Although the principles of sustainability have virtue and arguing against them is tantamount to “dissing” America, mom and apple pie, the program is relatively new and the costs can be substantial, leading many to take a “wait and see” position and others to completely ignore it, believing that LEED is just another fad.

Weinstein Hall is an addition/renovation project at our Political Science Building, which is located on Stern Quadrangle, University of Richmond’s academic “main”, and will become the “center for social sciences” housing Political Science, Sociology and Anthropology, Geography, Journalism, Rhetoric and Communication Studies, and the Speech Center. Growth space for these departments has been provided (initially occupied by the Human Resources department and overflow faculty from the Business School). Along with offices, classrooms, labs and group study spaces, Weinstein Hall will feature research suites, which will facilitate one on one research involving undergraduate students and tenured

Professors. One of the benefits of the renovation will be the restoration of the Commons Room (a space with a vaulted ceiling, wood paneled wainscot and a fireplace), which had been divided into three classrooms during the 70’s.

#### Project Data:

Year Completed:	2003 (projected)
Original Building Size:	14,000 s.f.
New Building Size:	52,000 s.f.
Professional of Record:	SMBW Architects
Builder:	Conquest, Moncure & Dunn
Construction Cost:	\$9,000,000
Project Cost:	\$12,000,000
Project Delivery:	C M at Risk

#### The Story:

A little over two years ago, the University was in the process of creating a new master plan when a small but vocal group of environmentalist faculty, staff and students lobbied the president to incorporate sustainability into the master plan. Their goal was to require the University to build all future buildings in such a manner as to receive a gold LEED rating. The president allowed the environmentalists to make presentations to various committees involved in the master planning process, which included members of

the board of trustees. After hearing representatives from the USGBC and Einhorn Yaffee Prescott's "Green Team" present the benefits of the LEED program, the board decided to write the following language into the master plan, "*The University may participate in the LEED certification process, depending upon available resources and competing priorities. Given available resources, we should seek to score as high as possible, focusing especially on those items that reduce long-term costs as they enhance sustainability.*"

The first building to be constructed under the new master plan is Weinstein Hall. While interviewing for this commission, the candidate A&E firms were asked if they had heard of LEED and what experiences they had designing sustainable buildings. Most had blank looks on their faces. The successful team had a limited knowledge of LEED, but a sincere desire to give sustainability a chance... at least the A of the A&E team (more on that in Lessons Learned).

As the design team was transitioning from design development to preparation of construction documents, the architect had one of its summer interns prepare a report summarizing the LEED rating system and evaluating the likelihood of each credit being appropriate for Weinstein Hall. LEED has a total of 69 credits available divided into six categories: Sustainable Sites, Water Efficiency, Energy & Atmosphere, Materials & Resources, Indoor Environmental Quality, and Innovation & Design Process. Although a gold rating (39 points) was out of reach, certification (26 points) was determined to be achievable.

During the meetings to review the status of the construction documents, the design team, which by then included the construction manager, discussed constructability, cost and

the viability of LEED credits. The decision to proceed with LEED certification was tabled due to a number of credits that were questionable and misinterpretation of a prerequisite: Fundamental Building Systems Commissioning. The problem with the last issue was language requiring the owner to "engage a commissioning authority". That requirement was a deal breaker since it was a prerequisite for LEED certification and the University was opposed to hiring a "commissioning authority" believing that its own staff performed those services. I later found out during a LEED training workshop that an institutional owner with the appropriate staff could act as its own "commissioning authority".

Although LEED was on hold, Weinstein Hall had a schedule to maintain and construction began as soon as the Fall '01 term came to an end. In accordance with the master plan requirement "to score as high as possible", the University incorporated the following sustainable construction practices as described in the LEED rating system:

1. Use a site sediment and erosion control plan that conforms to best management practices in the EPA's Storm Water Management for Construction Activities.
2. Install alternative-fuel refueling stations for 3% of total vehicle parking capacity of the site.
3. Add no new parking for rehabilitation projects and provide preferred parking for carpools or vanpools capable of serving 5% of the building occupants.
4. Implement a stormwater management plan that results in a 25% decrease in the rate and quantity of stormwater runoff.
5. Incorporate treatment systems designed to remove 80% of the average annual post development total suspended solids

- (TSS), and 40% of the average annual post development total phosphorous (TP).
6. Do not install permanent landscape irrigation systems.
  7. Develop and utilize a commissioning plan.
  8. Do not use CFC-based refrigerants in HVAC systems.
  9. Install fire suppression systems that do not contain HCFCs or Halon.
  10. Maintain at least 75% of the existing building structure and shell.
  11. Recycle and/or salvage at least 50% (by weight) of construction, demolition, and land clearing waste.
  12. Meet the minimum requirements of ASHRAE 62-1999, Ventilation for Acceptable Indoor Air Quality.
  13. Install a permanent carbon dioxide (CO<sub>2</sub>) monitoring system
  14. Meet or exceed the minimum requirements of the Sheet Metal and Air Conditioning National Contractors Association (SMACNA) Indoor Air Quality (IAQ) Guidelines for Occupied Buildings under Construction, and replace all filtration media immediately prior to occupancy.
  15. Install paints and coatings that meet or exceed the VOC and chemical component limits of the Green Seal requirements.
  16. Install carpet that meets or exceeds the Carpet and Rug Institute Green Label IAQ Test Program.
  17. Employ permanent entry way systems to capture dirt, particulates etc. from entering the building at all high volume entry walls, and construct housekeeping areas with deck to deck partitions with separate outside exhausting.
  18. Provide a minimum of one operable window and one lighting control zone per 200 s.f. for all occupied areas within

15 feet of the perimeter wall.

19. Provide control for each individual for airflow, temperature, and lighting for 50% of the non-perimeter, regularly occupied areas.
20. Provide line of site to vision glazing from 90% of all regularly occupied spaces.
21. Have at least one principal participant of the project team be a LEED Accredited Professional.

While the building was beginning to take shape, research continued for possible LEED certification. As the questions were answered, it became apparent that the project would score well (24 points), but not enough to gain certification. After the results of the research were presented to the University's Environmental Awareness Group (EAG), questions were raised as to why six of the credits were disqualified. Specifically:

- Why did the University not provide changing rooms for both men and women who ride their bicycles to work? (*Answer: The University has a facility within walking distance of Weinstein Hall.*)
- Why did the University not reduce non-roof heat islands? (*Answer: In order to achieve this credit, more parking spaces would have been sacrificed for tree islands, or 50% of the parking would have been placed underground, or 50% of the surface parking would have had to be an open grid pavement system. None of these options were acceptable to the University.*)
- Why did the University not reduce light pollution? (*Answer: The University has a historic streetlight standard that does not meet this requirement and the University is not willing to change its standard.*)
- Why did the University not install a

system to measure and verify numerous building systems? (Answer: *The University spends a considerable amount of money for building system controls for each building it constructs; unfortunately, this credit requires measurement of various electric loads which would have required a substantial increase in the power distribution network.*)

- Why did the University not install certified wood? (Answer: *The contractor tried to purchase certified wood, but no supplier in the area could be found.*)
- Why did the University not comply with ASHREA 55-1992? (Answer: *In order to achieve this credit, a humidification system would have had to been installed. Given our geographic location, only a few days during the winter are dry enough to warrant humidification. Humidification systems are problematic, expensive to install and maintain.*)

Since Weinstein Hall was only short two points, the chairman of the EAG suggested I consult with Southface Energy Institute, a nonprofit research firm offering technical assistance in the areas of energy efficiency, environment and building sciences, in an effort to find the points. Given that the provost, a member of the EAG, offered to pay for the consultation, LEED was still on the table. After reevaluating each credit and reviewing the logic of accepting or rejecting each credit with Southface, three of the credits previously assumed to be positive (Building Reuse, Daylighting, and Construction IAQ Management Plan: before occupancy) were rejected and seven previously rejected credits (Reduced Site Disturbance, 2 Resource Reuse credits, Recycled Content, Locally Harvested Materials, Low-Emitting Materials: Composite

Wood, and an Innovation & Design Credit: Paperless Submission) were accepted. Building Reuse was rejected because the addition exceeded 150% of the existing building and thereby was considered to be a new building. Daylighting was rejected because the ratio of window glass area to floor area did not meet the required standard. Construction IAQ Management Plan: prior to occupancy was rejected because the entire building would have had to been “flushed-out” with 100% fresh air for two weeks prior to occupancy of the entire building. Unfortunately, occupancy of the building was phased. Reduced Site Disturbance was allowed because a provision in the LEED handbook, not previously seen, stated, “Universities could designate an open area adjacent to the building equal to the building footprint...conserving the open space for the life of the building.” Two Resource Reuse credits were allowed because reuse of the existing building accounted for 10% of the total building material. The Recycled Content and Locally Harvested Materials credits were allowed after data collected from the subcontractors showed that 25% of all the building materials contained recycled material and 10% of all building materials were extracted, harvested, or recovered within 500 miles of the project. Credit for Low-Emitting Materials: Composite Wood was allowed because the University



decided to pay extra for composite wood containing no added urea-formaldehyde resins. Southface suggested the Innovation & Design credit of submitting all registration documents electronically. The net result was 28 points. Realizing that certification was indeed achievable, I set out to sell the idea to my boss and to the administration.

Having presented conflicting reports regarding Weinstein Hall being LEED certifiable, my credibility was in question. After convincing my boss that I did know what I was talking about, we debated the value of paying the additional cost necessary to certify a building under LEED. These costs include:

• Registration Fee	\$750
• Certification Fee	\$1,500
• Engineering Fees (related to LEED compliance)	\$15,000
• Cost of Alternative Refueling Stations	\$5,000
• Cost of Low VOC Paints	\$5,000
• Cost of Low VOC Carpet	\$5,000
• Cost of Low VOC Composite Wood	\$2,000
• Additional Administrative Expense (related to LEED compliance)	<u>\$20,000</u>
<b>Total</b>	<b>\$53,250</b>

His position was that Weinstein Hall would be the same sustainable building with or without the LEED certification so why pay the additional expense. I countered by comparing a LEED certificate to a college diploma. Gaining knowledge through independent study is wonderful, but not nearly as valuable as having a diploma to validate it. I then passionately argued that sustainability would only have a chance to succeed once the marketplace found it profitable to offer sustainable products and services; and that, institutional builders like universities are the

only group likely to make that happen. Without the LEED certificate as the prize, the opportunity to relax the sustainable practices becomes very tempting, especially when budgets become stressed. Ultimately, the decision was made to go for it and the president announced that Weinstein Hall would be registered for LEED certificate consideration during a ceremony this past January celebrating his signing the Talloires Declaration, committing the University to the sustainable cause.

**Lessons Learned:**

- 1) The base LEED certification level is relatively easy and inexpensive to achieve for most new buildings, but can be challenging if the exterior must be designed in a certain style such as Collegiate Gothic and/or the siting is dictated.
- 2) Join a support group! With any new skill set, the learning curve can be steep. Being able to talk to others that have been through the process can help alleviate the second-guessing one does where interpretations come into play.
- 3) Learn to speak “engineering” and invest in the A.S.H.R.E.A. books.
- 4) Only hire engineers that have experience/commitment regarding LEED!