

## Sustainable Buildings – Lee Medical Building

The Andrew E. Lee Memorial Medicine and Science Building (Lee Medical Building) is one of the cornerstones of The University of South Dakota campus and of the regional health care industry. It is a critical component of enhancing research and improving health sciences and medical education and research in the state. State-of-the-art technology is deployed throughout the building.



### Design and Construction

Because operations needed to be maintained on-site, the project was planned in three stages and took four years to complete. USD and Koch Hazard Architects advocated green building initiatives and followed strategies outlined by LEED (Leadership in Energy & Environmental Design) to design and construct a state-of-the-art building that operates more efficiently, conserving energy and water and creating a healthy place to work. In meeting the “Green Building” criteria they also used local suppliers to cut down on fuel emissions from truckers, recycled cardboard and steel from the old structure, and dealt with waste disposal in an environmentally friendly manner.

USD is seeking LEED certification of the Lee Medical Building through the U.S. Green Building Council's LEED for New Construction program. The LEED-NC program is a voluntary standard that defines high-performance green buildings that are healthier, more environmentally responsible, and less costly to operate.

**The LEED standards provide a rating system to benchmark a building's design and construction across six categories:**

### *Sustainable Sites*

Measures were taken during construction to reduce the building's impact on the immediate environment. In order to prevent loss of soil during construction by stormwater runoff and wind erosion, the design team followed a Site Sediment and Erosion Control Plan that protected topsoil by stockpiling for reuse and prevented erosion with silt fencing, grass, shrubs and trees to stabilize the soil.

In an effort to reduce pollution from automobile use and promote alternative means of transportation, the Lee Medical Building features 50 secure bicycle storage slots and shower/changing facilities within 200 yards.

### *Water Efficiency*

Design decisions were made to minimize the use of water resources. USD is committed to maximizing water efficiency within buildings to reduce the burden on municipal water supply and wastewater systems. By using low flow plumbing fixtures, the Lee Medical Building uses 26%



less water than baseline fixture performance requirements of the Energy Policy Act of 1992. The building contains Ultra-Sense model S-6080 faucets and low flow urinals (.05 gallons per flush.)

### ***Energy & Atmosphere***

During the Lee Medical Building design, construction and renovation, USD worked with a third party commissioning agent to verify and ensure that fundamental building systems were designed, installed and calibrated to operate as intended.

The Lee Medical Building HVAC&R systems use no CFC-based refrigerants. Elimination of CFCs in building equipment helps reduce ozone depletion and the negative effects of UV-B radiation on people.

To ensure that the building remains highly energy efficient and safe for occupants, a Measurement and Verification plan was developed to guide future energy tracking and management. This allows USD staff to verify and assist in maintaining the energy efficient operation of the building's mechanical and electrical systems.

### ***Materials & Resources***

The Lee Medical Building has dedicated area for recycling waste from the entire Lee Medical Building that accommodates, paper, corrugated cardboard, glass, plastics and metals.

During construction, this project used materials with recycled content, including the structural steel, reinforcing bars, and aluminum. Over 27% of the total value of the materials and products used for this project were manufactured regionally within a 500-mile radius. And, USD purchased 100% certified products harvested from FSC certified forests for laboratory casework and wood doors.

### ***Indoor Environmental Quality***

USD established minimum indoor air quality (IAQ) performance goals for the project. Protecting indoor environments from contaminants such as environmental tobacco smoke (ETS) is essential for maintaining a healthy space for building occupants. The University has implemented an aggressive Policy on Smoke-Free Zones that prohibits smoking in any building, within 25 feet of entrances, exits, and windows for any building, or at any other location where others would be required to walk through secondhand smoke to enter a building.

The project has installed a permanent temperature and humidity monitoring system that provides control of the building zones within the thermal comfort ranges defined in ASHRAE 55-1992.

### ***Innovation in Design***

USD is applying for recognition of innovative programs, including Green Cleaning custodial service that uses "green cleaning" products and equipment to reduce exposure to potentially hazardous chemicals and minimize the environmental impact on the surrounding ecosystem.



The Lee Medical Building includes more than 156,000 square feet of space.

### Atrium

- The eye-catching, four-story atrium brings the building together literally and figuratively
- As a bridge between the building's two wings, the atrium serves as a gathering place
- It provides an inviting space to host speakers, receptions, meetings, conferences and symposia



### Graduate Education and Research Wing

- This wing is defined by its flexibility and organization
- More than 30 laboratory modules can be changed as necessary to accommodate evolving research needs for the next 50 years
- Laboratories are clustered around faculty offices, enhancing interaction between faculty and students with similar research interests
- The state-of-the-art labs are a critical component in boosting research efforts in the state

### Medical Education Wing

- This wing includes a progressive learning environment, shifting from traditional lecture-style teaching to collaborative learning through small groups
- Students in basic health sciences will learn as they work together through problem solving with real-life human examples
- The teaching style is patient-based and the most effective way to teach future health care providers
- As medical and health science students learn side-by-side, they increase their appreciation for how different professionals serve each patient
- The basement houses a state-of-the-art gross anatomy laboratory for the body donation program as well as clinical exam rooms where students experience a real-world environment
- On the basement and first-floor levels, space is included for classes, conferences, lectures and seminars
- Two large, health science teaching laboratories are the focal point of the third floor. Administrative offices are located in the northwest corner of the top three floors



## Technology

- This is a building for 21st Century
- Technology includes wireless networking
- Audio and video recording capabilities in learning spaces improve feedback students receive from faculty
- Classrooms are wired to enable delivery of educational content online
- Computers in classrooms and study spaces are fully loaded with essential specialty software
- Security also is state-of-the-art with key cards access for students, faculty and staff
- Twenty-seven security cameras are monitored by the Department of Public Safety
- Computers monitor the building's mechanical systems and generate an automatic alert if necessary

