News Release

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Landmark Law Library Reading Room at University of Michigan Undergoes Lighting Upgrades

Energy efficiency strategies result in improved lighting and reduced energy use

ANN ARBOR, Mich., March 11, 2009 – One of America's favorite works of architecture as listed in a survey[1] conducted by the American Institute of Architects and Harris Interactive, has undergone lighting upgrades, a ceiling restoration and other improvements. The project team, led by architecture firm Lord, Aeck & Sargent and lighting consultant Gary Steffy Lighting Design, utilized a variety of strategies to reduce energy use and optimize lighting while minimizing impacts to and preserving the historic fabric of the Collegiate Gothic structure.

The landmark Reading Room in the University of Michigan's William W. Cook Legal Research Building is the primary beneficiary of the lighting upgrades, which also were made in the building's lower level corridor and in the offices and public spaces of Hutchins Hall,

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[1]The William W. Cook Legal Research Building was ranked 94th in a public poll conducted by the American Institute of Architects and Harris Interactive on the occasion of the AIA's 150th anniversary. The 150 works of architecture ranked include buildings, bridges, monuments and memorials. The research was conducted in two phases including interviews with AIA members followed by a survey of the public. Research took place between Oct. 18, 2006 and Jan. 3, 2007. For more information, visit www.favoritearchitecture.org.

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an adjacent classroom building. Phase 1 of the two-phase, $6.5 million project addressed the Legal Research Building, while Phase 2 addressed Hutchins Hall. Both buildings are located on the university's Law Quad.

When Phase 1 construction began in March 2008, the Reading Room, though beautiful, was stark, dirty and filled with many dark spaces, noted Lois Harden, University of Michigan Law School facilities manager. Upon completion of Phase 1 in January, she said, "The change has been dramatic. The Reading Room is considered a sacred space, and it's used now 100 percent of the time. It wasn't like that before. The end product has far exceeded everyone's expectations."

Uplighting illuminates the ceiling

It took a lot of careful planning and challenging, painstaking work to reach the end product.

Construction of the Legal Research Building was completed in 1931, and until last year the only change made to the Reading Room had been the 1950s installation of downlights, which required penetration of the plaster ceiling medallions.

"The ceiling plaster was made to resemble wood, but you couldn't see the ceiling's beautiful detail. It wasn't lit and was generally dirty," said Terry Sargent, AIA, Lord, Aeck & Sargent principal in charge of the project. "So we (Lord, Aeck & Sargent and Gary Steffy Lighting Design) decided to clean it, remove the downlights, restore the medallions and then illuminate the ceiling with uplights."

The addition of uplights, however, had to be done sensitively so as not to disturb the historic fabric of the room. The solution was to place the uplights along the perimeter of the room on the window sills and conceal them behind metal screens. The placement of the uplights required the routing of electrical conduit from the electrical panels, first under the floor, then up behind the historic oak paneling that lines the room to a height of more than 13 feet, and then

behind the limestone veneer on the walls to reach the window sills. The original mortar had to be matched when the limestone blocks were replaced, and the metal screens designed to hide the uplights were faux-painted to resemble the limestone.

“When I take people on tours of the Reading Room, they notice the detail on the ceiling, which no one ever noticed before, but they don’t have a clue where the illumination is coming from,” Harden said.

“What used to be a dark brown ceiling now glows,” Sargent added. “You can see the vivid colors and the ceiling pattern. It changes the character of the space dramatically.”

Other Reading Room lighting improvements include the addition of egress lighting, cleaning of the historic chandeliers, re-plating of the stacks lights and rigorous cleaning of the table-mounted light fixtures.

Before the lighting upgrades were made, there was no egress lighting. The project team understood the need to install it without modifying the historic fabric of the Reading Room, so exit signs were designed to be mounted on twisted metal posts to fit in with the room’s design.

Sargent noted that the chandeliers had turned black with age, and their cleaning revealed gold leaf highlights, which no one knew was there before.

Rounding out the Reading Room renovations were the replacement of the original cork floor finish and the refinishing of the original 14-foot-long oak tables.

Energy-efficiency strategies result in 9 percent wattage reduction

Along with the refurbishment of existing lighting fixtures, installation of the uplights and egress lighting and the cleaning and restoration of the ceiling, came a host of energy-efficiency strategies that Gary Steffy, principal of Gary Steffy Lighting Design, said have resulted in a net 9 percent wattage reduction in the Reading Room after reapportionment of the overall connected load. The strategies range from the use of dimmed long-life incandescent lamps in the chandeliers, long-life compact fluorescent lamps in the stacks and circulation desk fixtures,

highly efficient T5 linear fluorescent lamps in the reading table lights, and energy-efficient, long-life ceramic metal halide table lamps and uplights, to the use of photocell control, astronomical time clock, half-level-switching, alternate-day-switching, and reapportionment of the connected load.

The uplights, stack lights, reading table lights and chandeliers have been placed on photocell control, which is a daylight sensing system that allows the lamps to operate in accordance with the amount of daylight in the room. An astronomical time clock is an automated system that keeps track of daylight savings time, seasons of the year, and sunrise and sunset to more precisely control lights when needed.

“We anticipate that the photocell control and astronomical time clock strategies alone will reduce energy use between 30 and 50 percent annually, depending on the amount of bright versus overcast days each year,” Steffy said. “And just by cleaning the ceiling, we’ve doubled its reflectance level to an estimated 10 percent from an estimated 5 percent.”

Steffy noted that the table fixtures are now half-level switched, meaning that when daylight is sufficient, the lamps automatically reduce wattage used to half-level. The uplights and circulation desk fixtures use an alternate-day-switching strategy where half the lamps in each fixture are on one switch and the other half on another switch so that when half-level lighting is in use, the set of lamps that are in use alternate on a daily basis. This helps extend the replacement cycle of the lamps for more convenient group maintenance.

“Using the various lamping strategies to reduce the wattage in many of the lights allowed us to reapportion the Reading Room’s overall connected load. Otherwise, we wouldn’t have been able to add the uplighting and egress lighting. Instead, we’ve added both and still reduced the connected load by 9 percent,” Steffy said.

New lighting fixtures

The remainder of Phase 1 included the installation of new lighting fixtures in the lower level corridor of the Legal Research Building. These fixtures as well as those designed and installed in Hutchins Hall during Phase 2, also use an alternate-day-switching strategy to reduce energy use and extend in-service lamp replacement cycles. The fixtures were designed to be compatible with the character of the Gothic-inspired architecture of the buildings on the Law Quad.

Project funding

Funding for both phases of the project came from a $3 million gift to the Law School along with University of Michigan investment proceeds. The gift was made by Charles T. Munger, vice chairman of Berkshire Hathaway Inc.

The project team
The University of Michigan William W. Cook Legal Research Library (Phase 1) and Hutchins Hall (Phase 2) project teams included:

- Lord, Aeck & Sargent, Inc. (Ann Arbor, Mich.), architect, Phases 1 and 2
- Gary Steffy Lighting Design (Ann Arbor, Mich.), lighting consultant, Phases 1 and 2
- Peter Basso Associates (Ann Arbor, Mich.), MEP/FP engineer, Phases 1 and 2
- Robert Darvas Associates (Ann Arbor, Mich.), structural engineer, Phases 1 and 2
- Crenshaw Lighting (Floyd, Va.), lighting refurbishers, Phases 1 and 2
- Building Arts & Conservation (Saline, Mich.), architectural finish conservators, Phase 1
- Phoenix Contractors (Ypsilanti, Mich.), general contractor, Phase 1
- Spence Brothers (Ann Arbor, Mich.), general contractor, Phase 2
- A.F. Smith Electric (Ypsilanti, Mich.), electrical contractor, Phase 1
- JG Squared (Chelsea, Mich.), electrical contractor, Phase 2

About Lord, Aeck & Sargent
Lord, Aeck & Sargent is an award-winning architectural firm serving clients in scientific, academic, historic preservation, arts and cultural, and multi-family housing and mixed-use markets. The firm's core values are responsive design, technological expertise and exceptional service. Lord, Aeck & Sargent has offices in Ann Arbor, Michigan; Atlanta, Georgia; and Chapel Hill, North Carolina. For more information, visit the firm at www.lordaecksargent.com.

About Gary Steffy Lighting Design
Gary Steffy Lighting Design, based in Ann Arbor, Michigan, was founded in 1982. The firm advises clients on interior and exterior architectural lighting that balances users' vision and comfort needs with social and economic issues. Design aesthetics and objective lighting criteria are pursued vigorously in achieving lighting solutions appropriate to clients' priorities. For more information, visit the firm at www.gsld.net.

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