Green and healthful buildings recognized by annual awards

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Berkeley — Three “green” buildings that provide healthful and productive workplaces have been recognized as recipients of the Livable Buildings Awards for 2011 by the University of California, Berkeley’s Center for the Built Environment (CBE). The top award goes to the new headquarters for Canada-based Enermodal Engineering, a building that demonstrates ultra-low energy use while providing the highest level of comfort for its owner-occupants. Also recognized by the awards jury as honorable mentions were the Kresge Foundation Headquarters and the Tahoe Center for Environmental Sciences. These projects were among the highest scorers in CBE’s Occupant Indoor Environmental Quality (IEQ) Survey, a benchmark of building occupants’ experience. In addition to the high occupant survey rankings, these three projects have all received LEED-Platinum certifications, the highest level that can be attained under the widely adopted green building rating system.

For the design of their new headquarters, on a site overlooking the Grand River in Kitchener, Ontario, Enermodal Engineering acted as design engineer, owner and tenant. Such multi-tasking helped the firm to pursue its goal of making a healthy and attractive work environment that is exemplary for its sustainable design, using simple design approaches and on-the-shelf technologies. The award program jury was impressed by the project’s architecture, sustainable features, and occupant survey scores. “This project team just got it. From the onset they had a goal, they put priorities in place to maximize strategies, and did so in an eloquent way. Ninety-nine percent of folks are happy with that space,” points out Ted van der Linden, one of the program jurors.

For example, the building’s mechanical system has been designed to serve areas much smaller than what standard design practice entails. This saves energy by ventilating only areas that are occupied, at the same time giving occupants better control of their environment. The system recovers heat from air before it is exhausted from the building, and uses underground “earth tubes” to pre-condition air before it enters the building. Lighting controls and automated exterior window shades are used for “harvesting” daylight, and provide pleasing visual qualities while saving energy. Combined these features result in energy use that is 82 percent less than a conventional office building in Canada, based on measured data after a year of operation.

The project team considered the riverside site as a constant reminder of the importance of water stewardship. Drought tolerant native plants, a sizable rainwater cistern, and low-flow plumbing fixtures have led to measured water use that is 89 percent less than that of a standard building. The building is also the first in Canada to hold three LEED-Platinum certifications — for the building itself, for its interior architecture, and for its operational performance.

Conventional wisdom holds that making a building energy efficient requires a sacrifice in terms of the personal comfort of the inhabitants. However judging by the employees of Enermodal, this is clearly not the case. The satisfaction survey administered by CBE showed that employees were overwhelmingly pleased with their workspace, and the survey scores for all but one category put the building in or above the 95th percentile when compared to other buildings. While the score for acoustics was good, in the 70th percentile, Enermodal’s management decided to improve on this by installing “sound masking” (commonly referred to as white noise) in open office areas, and has encouraged employees to hold all
meetings and conference calls in meeting rooms. Enermodal is conducting another survey to learn if this strategy was successful.

Stephen Carpenter, president of Enermodal Engineering, says that the firm is pleased with the results. "As a consulting firm that built its reputation as an industry leader in green building design, creating a high performance, healthy indoor environment for our employees is not only an important showcase for our clients but helps us attract and retain the industry's brightest and most innovative minds," he explains. "It is wonderful to receive this recognition as North America's most 'livable building' from this respected research, education, and advocacy organization."

The award jurors also recognized the Kresge Foundation Headquarters, in Troy, Michigan, with an honorable mention. The project included the renovation of a historic stone farmhouse and barn in the design of its new headquarters in the suburbs north of Detroit. The building's architecture includes vegetated green roofs and daylighting features such as exterior shades and interior light shelves. A two-story interior waterwall provides humidification and sound masking to increase "sound privacy" for employees in open office areas. The building's mechanical system, designed by the global engineering firm Arup, incorporates underfloor air distribution and a geothermal heating and cooling system to reduce energy use. The project's site features are likewise noteworthy, with bioswales, a constructed wetlands for stormwater management, a cistern for rainwater storage, and native prairie landscaping. To leverage the project's impact, the Kresge Foundation has used its headquarters as a living laboratory, and commissioned a team led by CBE to conduct a detailed post-occupancy evaluation of the building and its site. The report includes lessons learned about design, commissioning, and operating high-performance buildings that may be valuable to organizations implementing similar strategies.

In addition, the jurors singled out the Tahoe Center for Environmental Sciences in Incline Village, Nevada, as an honorable mention for systems integration. The building houses laboratories, classrooms, offices, student lounges, and educational outreach facilities. The innovative mechanical system, designed by Integral Group’s Oakland office, includes radiant floors for heating, "active chilled beams" for cooling, and underground storage tanks that hold chilled water generated at night using a cooling tower, reducing daytime electrical loads. The building, which uses 60 percent less energy than a standard code-compliant building, also includes a demonstration solar hot water heater, and 32 kW of photovoltaic panels that can generate up to 11 percent of the building's total electrical use.

These three buildings were selected by the awards jury from among a group of finalist buildings that all met high standards for indoor environmental quality. Research Specialist John Goins, who leads the IEQ survey research at CBE, says that "the occupant survey results for the finalist buildings this year were exceptional, they compare well against all the buildings that have been surveyed in the past." He observed that building industry professionals are increasingly making a greater effort to provide good workplace environments, and that the CBE survey is a useful tool for getting feedback about buildings. "I saw a recent article entitled ‘buildings are for people,’ and that sums it up for me," he says.

More details about the projects and their CBE survey results are online at: http://www.cbe.berkeley.edu/livablebuildings.

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