Georgia Library Quarterly

Volume 47 | Issue 1 Article 5

January 2010

Leadership, Libraries, LEED for the Future

Kathryn S. Ames
Athens Regional Library System, kames@arlsmail.org

Greg Heid
Newton County Library System

Spotlight On CONSTRUCTION

Leadership, libraries, LEED for the future

by Kathryn Ames and Greg Heid

Environmental awareness is essential in the design of the modern public library, and there are various levels of implementing green design techniques in library construction. Library directors, trustees and the public should take the lead to define their local expectations for the level of sustainability during the planning phase. While there are no requirements under the Georgia Public Library Construction Policies, use of sustainable practices makes sense from both an economic and socially responsible perspective, and local library boards should consider implementing green techniques. The LEED construction and design principles provide one tool for evaluating project sustainability. Library supporters must assume leadership in deciding to build a green facility.

Ames

Heid

What is LEED construction? LEED stands for Leadership in Energy and Environmental Design and was developed by the U.S. Green Building Council (USGBC) as a means to evaluate construction design and to establish standards for sustainability. The USGBC represents all phases of the construction industry and has long been a pioneer in promoting sustainable construction materials and design. Originally developed in 1994 with a revision in 2009, the standards, which provide measurable goals, have undergone several changes, and there are now separate LEED standards for homes, schools, retail businesses, renovations and new buildings including public libraries in Georgia.

LEED is intended to provide a tool for design professionals and their clients to help promote energy savings, develop water efficiency, reduce greenhouse gases, eliminate harmful chemicals that produce gas emissions, reduce solid waste, improve air quality and build sustainable buildings that will have a positive return on investment. By using LEED as a guide to design and management of the project, patrons will enjoy healthier buildings that are more comfortable for both users and staff. Operating costs from use of high-efficiency systems will be lower. Durability from using quality construction materials will also limit operating costs. Finally, some insurance companies are beginning to recognize the benefit of LEED construction and will reduce policy costs based on this certification.

LEED certification is based on a series of points that are accumulated from a set of design categories. LEED 2009 offers 100 possible points; buildings may qualify at four levels based on the category achieved: Certified LEED requires 40-49 points, Silver requires 50-59 points, Gold requires 60-69 points and Platinum is 80 points and above. Each of the seven categories has at least one or more prerequisites that must be met. LEED 2009 offers a definition of the intent for each classification, the requirements, options for meeting the point and potential strategies and technologies.

To receive the voluntary LEED certification, the architect or LEED consultant must register the project and submit various documents. The LEED 2009 rating system is based on applying points for design in seven areas; each credit is worth one point. All project work must meet local, state and federal environmental laws and must be a complete project.

Some examples of the requirements are as follows:

- **The Site** — The prerequisite for site selection is "Construction Activity Pollution Prevention," which means that all construction will use methods to control

erosion, limit waterway sedimentation and minimize airborne dust generation. There are 26 possible points for site work. Points are awarded for such things as development density and community connectivity, brownfield redevelopment, alternative transportation availability (including access to public transportation such as city bus and routed carriers, bicycle storage, parking and carpooling availability, low-emission and fuel-efficient vehicles), reduction of site disturbances, stormwater design, reduction of heat islands and light pollution reduction. As an example, using Credit 4.1, Alternative Transportation, worth six points, the intent is to reduce pollution and land development impacts from automobile use. The first option is to be within 1/2 mile of an existing or planned commuter rail, light rail or subway station. The second option is bus stop proximity with a stop within 1/4 mile of the site. The strategy for gaining this credit would be to locate the building near public transit.

- **Water Efficiency** — The intent of this 10-point credit is to increase water efficiency to reduce the burden on the municipal water supply and wastewater systems. Prerequisite is "Water Use Reduction." Credits are awarded for water-efficient landscaping, innovative wastewater technologies and water use reduction methods including low-flow toilets and faucets.
- **Energy and Atmosphere** — The intent of the section, which includes up to 35 possible points, is to insure that energy-related systems are selected to meet owner's expectations in an efficient manner. Commissioning, which includes a planning team to oversee the process, looks at every stage of the design and identifies best practices of energy efficiency. The team examines the use of renewable resources, minimum code requirements and anticipated energy performance.
- **Materials and Resources** — Fourteen points are available in this category with a prerequisite of reducing waste generated by the construction project. If this is a renovation project, are the building shell, windows, floors, ceilings reused? Points are allocated for each phase of this process. Points are also awarded for such things as recycling construction waste, reuse of existing materials, use of recycled materials and the use of rapid growth and renewable materials.
- **Indoor Environmental Quality** — The purpose of these points is to help establish standards for a minimum level of indoor air quality, environmental smoke controls, ventilation, daylighting and thermal comfort. Fifteen points are possible in this section.
- **Innovation in Design Process** — Six points may be awarded for renewable design that is deemed to be exceptional or innovative.
- **Regional Priority** — Four points will be applied for those projects that address geographically specific environmental priorities. The USGBC has identified specific issues based on these priorities.

In addition, the LEED process encourages an educational component, so appropriate for the "lifelong learning" role of public libraries. Libraries that use the LEED standards could promote informational seminars on green buildings and develop displays of materials so that library users not only may see how the library will incorporate LEED standards into the library design but will also see how they too might implement sustainable techniques in their own homes. The full LEED 2009 standards and a discussion of each point may be found on the USGBC Web site, https://www.usgbc.org.

Why would we want to have a LEED-certified library?

Reduced operating costs are the first expectation of a new LEED facility. Research has shown that decreased energy costs of at least 15 percent and some by more than 60 percent should be realized (Building Commissioning Association). This reduction may be accomplished by using LED lighting in selected locations, electronic ballasts in fluorescent lights, and energy-efficient heating and air conditioning systems. Other advantages include lower systems replacement costs, lower facility maintenance and a sustainable approach to the project. Many communities now require new public construction to be sustainable because they recognize the value of providing healthier buildings for public use.

There is, of course, a downside to using the LEED standard, and that is the increased up-front expense. First, an architect must be hired who understands the LEED requirements; the same is true for contractors who may have limited experience with the process. It does mean that the director and library board must be aware of the requirements and the choices that must be made during the early design phases.

Construction materials required for LEED certification may be higher in cost due to their recycled content, the special nature of the materials and the low volatile content and because the materials and design concepts are not yet a part of mainstream construction and hence are not manufactured in amounts that usually bring bulk discount pricing. The percentage of increased cost that LEED design and specified materials will bring to a construction project depends on the level of LEED certification that the library director and library board wish to pursue. The more sustainable the facility is to be constructed, the higher the percentage of up-front costs that need to be added to the

project. Many design professionals will cite differing estimates as to the percentage of up-front construction costs that LEED projects will require above basic traditional construction costs. The following is a general standard that averages what can be found in the current literature:

- **LEED Certification** — Generally no significant increase in construction costs.
- **LEED Silver** — Average of 1 percent to 2 percent increase in construction costs.
- **LEED Gold** — Average of 2 percent to 4 percent increase in construction costs.
- **LEED Platinum** — Average of 11 percent to 35 percent increase in construction costs.

Green construction, energy efficiency and sustainability of LEED standards apply to many forms of construction and renovation. LEED standards and principles can be applied to renovation of an existing library space without the addition of square footage. Additionally, through the Existing Buildings: Operations and Maintenance section, the LEED rating system helps library directors and staff measure operations, improvements and maintenance on a scale, with the goal of maximizing operational efficiency while minimizing environmental impact. LEED for Existing Buildings addresses whole-building cleaning and maintenance issues (including chemical use), recycling programs, exterior maintenance programs and systems upgrades. A visit to the full LEED 2009 standards at the USGBC Web site, https://www.usgbc.org, gives further information on the various types of construction that can receive LEED certification.

Spotlight On CONSTRUCTION

Once the library director and library board of trustees have made the decision to pursue LEED standards in construction and/or renovation of the library facility, the next major decision to be made is concerning the selection of architect for the project. The majority of architects and architectural firms are becoming aware of LEED principles for construction and design. The Request for Qualifications should require that architectural firms not only have previous experience designing and constructing a LEED-certified or green building but that the firm place architects on the design team who are certified LEED AP (Accredited Professional) as certified by U.S. Green Building Council. Architects who are certified by the USGBC are fully trained and tested in LEED principles, the point system that governs LEED certification and how best to integrate LEED practice in all methods of design and construction.

LEED AP certified architects educate the library director and library board and explain all of processes of LEED design. Throughout the design and layout of the library, the architect will discuss LEED points with the director and library board. Trained knowledge of LEED points allows the architect to best interpret what the owner of the building wants in functionality and design of the building and select the best design to maximize on LEED standards and points. Through training, the architect also learns how to negotiate and interpret LEED standards and requirements with the general contractor and the subcontractors who are selected to construct and/or renovate the building.

Another key participant for LEED design and construction of a building is the LEED commissioning agent. Often the Agent represents an independent team of engineers who are trained and certified by the USGBC to ensure that all LEED standards are followed from design to construction of the facility. This team ensures that LEED points have been obtained and certifies to the USGBC that a building has followed all of the requirements to achieve the points to attain a particular level of LEED certification (Certified, Silver, Gold or Platinum.) Once the architect has been selected for a construction project, it is imperative that the library director and library board move forward to select a LEED commissioning agent for the project. Often, the architect may assist the library director and board in selecting the commissioning agent by generating the RFP and finding a list of agents who may be interested in submitting a proposal for the job. Because the commissioning agent is independent to the design and construction of the project, the library board needs to directly contract with the selected LEED commissioning agent rather than subcontracting through the architect.

Contracting the services of a LEED commissioning agent is a required step in order to obtain LEED certification of a library facility. Many times, library boards of trustees decide to forgo the hire of a Commissioning Agent. The additional cost of a commissioning agent is well-spent insurance that the director, the library board and the citizens are receiving the best design, construction and equipment installation for the tax dollars spent on the project. The LEED commissioning agent works for the owner of the project. The Commissioning Agent works with the architect to ensure good practices are implemented into the layout and design of the building. He also reviews interior surfaces and furniture chosen by the interior designer to ensure green, sustainable products are chosen for the project. If the agent believes that LEED principles or other good practices are not being followed,

the agent will inform the owner of issues and will assist the library director and library board in discussions to correct inconsistencies or issues that have been found.

The LEED commissioning agent also proves an invaluable partner, working for the library director and library board, during the construction and after the construction of the facility. Once the design of the library has been completed and the general contractor has been selected with all of the subcontractors, the LEED commissioning agent works with the general contractor to ensure that all LEED design principles and requirements are followed and implemented. The agent begins with a mandatory pre-construction meeting with the owner, architect, general contractor and all subcontractors to discuss the commissioning agent's role, expectations and processes with the group. During the meeting, the agent clarifies that they represent the owner of the project. Then during the actual construction of the project, different engineers of the LEED commissioning agent will periodically inspect the building to ensure all LEED principles and practices are followed.

Not only does the agent inspect whether the structure is correctly erected with specified green materials, but the different engineers also inspect the construction site to ensure that construction waste is recycled, silt fences are working, that runoff from the site is contained and that all other clean, green construction practices are being observed. During this process, directors and library boards of trustees soon find the fees of the LEED commissioning agent to be a well-placed investment, as the agent serves as a second set of professional eyes that ensure that the building is being well-constructed as designed.

The general contractor company should be selected by the library board for the company's collective knowledge in LEED standards and point system as well as for their experience constructing buildings that have been LEED-certified. To date, the USGBC does not have a training program or distinction for general contractors or subcontractors in LEED standards or practices. Selecting a general contractor and requiring subcontractors to be knowledgeable about LEED standards as well as requiring previous experience constructing a green or LEED building will ensure a better understanding and realization of the architect's design. It will also minimize miscommunication and conflicts between the general contractor or subcontractors with the LEED commissioning agent.

Throughout the construction of the facility, the engineers of the LEED commissioning agent perform inspections as to the actual fabrication of different aspects of the building. The agent also monitors the actual construction site to ensure that the workers continue to maintain a clean working environment that follows recycling of construction waste and creates as little impact upon the surrounding environment as possible. Once the construction project has achieved substantial completion, the commissioning agent enters into a major phase of the contract. At this juncture, the engineers of the agent will inspect the actual operation of each of the building's systems to ensure that the installation is operating and that each system is operating within both the specified guidelines of the contract documents and LEED energy-efficiency guidelines. Electrical systems, plumbing, fixtures, heating and cooling systems and any other energy systems in and outside of the building are tested. When all systems are inspected and passed by the LEED commissioning agent, LEED standards require that the owner of the building be given full instructions of each system and be given full verbal instruction as to the layout and operation of each.

Spotlight On
CONSTRUCTION

Once the library is opened to the public, the responsibility of LEED standards and practices now become the responsibility of the staff. Staff members must embrace the principles of LEED sustainability and energy efficiency by maintaining systems and routines that have been implemented into the building. For example, the energy-efficient heating and cooling systems that are installed in the library must be maintained through regular inspections and ongoing upkeep by the staff or hired contractors. Regular paper, plastic, etc. waste from the library needs to be recycled appropriately. Sensors in offices, closets and restrooms that automatically illuminate the spaces when occupied should not be adjusted to stay on throughout the hours that the library is occupied by the public. Certified nontoxic cleaning agents must be used for regularly scheduled cleaning of the library, and any repairs that must be made to the building need to be fixed or mended with identified nonvolatile materials.

The LEED certification of the library facility depends on the ongoing adherence to green practices of operation. For eight months after the library opens to the public, the commissioning agent will make periodic inspections of the facility to ensure that the staff members are continuing to understand and maintain the heating, cooling and other systems to peak energy efficiency. The agent will also observe public and staff practices to ensure that the documented paper and plastic recycling program is being maintained. At the end of the eight-month time period, engineers from the commissioning agent will return to

perform a rigorous series of tests on all systems within the building to ensure that these systems continue to perform in the most energy-efficient capacity.

If the library passes all of the informal inspections and when the agent's tests have verified that all systems within the facility are performing to the standards of peak efficiency, then the agent will certify the building, and the library will receive their LEED award of distinction at the appropriate level.

Sustainable, green design is an attainable goal for any public library construction, expansion or interior renovation project. LEED standards and practices of design are among the best principles that a library director and library board of trustees can follow to design tomorrow's libraries. There will be some additional costs that will be added to the project. There will be additional consideration and work that will be added to the project. And there also will be additional professionals who need to be subcontracted with to complete the project. But the overall human, environmental, cost recovery, and durability benefits that LEED construction brings to a library construction will far outweigh any additional efforts that are necessary to complete a LEED-designed project. LEED is the method for responsible construction of future public libraries. ⏭

Kathryn Ames is director of the Athens Regional Library System. Greg Heid is director of the Newton County Library System.

Bibliography:

https://www.usgbc.org/

www.greensourceconstruction.com

http://thegreenlibraryblog.blogspot.com/

Green Building – Wikipedia

Architecture of Change: Sustainability and Humanity in the Built Environment, edited by Kristin and Lukas Feireiss. 2008

Environmentally Responsible Design: Green and Sustainable Design for Interior Designers, edited by Louise Jones. 2008

Green Building A to Z: Understanding the Language of Green Building by Jerry Yudelson. 2007

"The Dollars and Cents of Green Construction: Being Environmentally Friendly Brings Financial as Well as Social Benefits," by Andrew Meyerson. *Journal of Accountancy*, May 1, 2005

Costing Green: A Comprehensive Cost Database and Budgeting Methodology by Davis Langdon. 2004

Green Building Costs and Financial Benefits by Greg H. Kats. 2003

Live Oak opens Savannah's first LEED-certified building

Live Oak Public Libraries cut the ceremonial ribbon for Chatham County's first LEED-registered building on Nov. 18. Numerous state and local elected officials, civic leaders and neighborhood groups attended the ceremony for the Southwest Chatham Branch in Savannah.

"We are very excited to open this new 50,000-square-foot LEED-certified building," said Director Christian Kruse. "We're even more proud, however, of how the community has flocked to it in the few short weeks since its opening. The public has embraced this wonderful new building and everything it has to offer. In this day and age, it's heartwarming to see just how important public libraries are to our community." The Southwest Chatham Branch is the second largest library in the 20-facility Live Oak system.

The Leadership in Energy and Environmental Design (LEED) Green Building Rating System, developed by the U.S. Green Building Council, provides a suite of standards for environmentally sustainable construction. LEED-certified projects cost less to operate and maintain, are energy- and water-efficient and contribute to the health and productivity of their occupants. The new library will cost at least 30 percent less to operate than an average building of similar size, Kruse said.

The exterior of the Southwest Chatham Branch

The $15 million facility first opened to the public on Oct. 20. It boasts approximately 100,000 books, DVDs, Blu-ray, CDs and audiobooks, and it features a 200-seat auditorium that will be available for public use.

Its children's department features a three-dimensional live oak tree made of steel that wraps around a 10-foot column and has an 18-foot canopy. For teens, the library offers four study rooms and two teen study lounges. The library also features a public-access computer room that seats up to 50 and a Friends of the Library store. ⏭