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## **What Makes a Building 'Green'?**

*15 October 2005*

The Lemelson Center is pleased to welcome you to today's behind-the-scenes, guided tour of three, environmentally-responsible building projects in the greater Washington, D.C., area.

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### **What is green building?**

From [www.arlingtonva.us/Departments/EnvironmentalServices/epo/pdffiles/Green\\_building.pdf](http://www.arlingtonva.us/Departments/EnvironmentalServices/epo/pdffiles/Green_building.pdf)

"Green building' is a collection of design and construction strategies that significantly reduce or eliminate the negative environmental impacts of a building while providing healthy indoor space for its occupants. Building green requires an integrated design approach that looks at all components of the building project and evaluates the interrelationships among the building, its specific components, its surroundings, and its occupants. This approach means different things for each project—it can include thoughtfully siting the project to protect natural resources on the site, incorporating energy and water efficient components, creating healthy indoor environments with lots of daylight and ventilation and without toxic chemicals, reducing waste during construction and building operation, or using materials that minimize the impact on the regional environment.

Green buildings have many benefits, including more efficient and cost effective use of building resources, significant energy and operational savings, increased productivity and reduced absenteeism among occupants, and reduced stormwater and air pollution impacts. Recent analysis of existing green buildings shows that the upfront cost of building green ranges from 0-5% of total construction cost, but these costs are recouped through reduced operational costs over the life of the building (and often within the first few years of operation)."

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### **What is LEED?**

From [www.leedbuilding.org](http://www.leedbuilding.org)

"The LEED (Leadership in Energy and Environmental Design) Green Building Rating System® is a voluntary, consensus-based national standard for developing high-performance, sustainable buildings. Members of the U.S. Green Building Council (USGBC) representing all segments of the building industry developed LEED and continue to contribute to its evolution. LEED standards are currently available or under development for:

- New commercial construction and major renovation projects (LEED-NC)
- Existing building operations (LEED-EB)
- Commercial interiors projects (LEED-CI)
- Core and shell projects (LEED-CS)
- Homes (LEED-H)
- Neighborhood Development (LEED-ND)

LEED was created to:

- define "green building" by establishing a common standard of measurement
- promote integrated, whole-building design practices
- recognize environmental leadership in the building industry
- stimulate green competition
- raise consumer awareness of green building benefits
- transform the building market

LEED provides a complete framework for assessing building performance and meeting sustainability goals. Based on well-founded scientific standards, LEED emphasizes state of the art strategies for sustainable site development, water savings, energy efficiency, materials selection and indoor environmental quality. LEED recognizes achievements and promotes expertise in green building through a comprehensive system offering project certification, professional accreditation, training and practical resources."

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### Today's tour

- The **Chesapeake Bay Foundation's Philip Merrill Environmental Center** in Annapolis, Md. is a prime example of sustainable architecture and the first to receive the U.S. Green Building Council's Platinum LEED rating. The Chesapeake Bay Foundation, founded in 1967, is the largest conservation organization dedicated solely to saving the Chesapeake Bay watershed.

From [www.cbf.org/site/PageServer?pagename=about\\_merrillcenter\\_index/](http://www.cbf.org/site/PageServer?pagename=about_merrillcenter_index/)

"The Philip Merrill Environmental Center is the Chesapeake Bay Foundation. In design, construction and operation, the Center reflects our mission to protect and restore the Bay and is a valuable resource not only for the nearly 100 people who work here, but also for our 116,500 members and volunteers. To save the Bay, we must reduce pollution, restore habitat, and replenish our fish stocks. The Merrill Center combines space-age technology with age-old techniques to play a role in each.

CBF built the Merrill Center on a cradle-to-cradle philosophy. All materials are made of recycled materials or created through processes that don't damage the environment. When materials wear out, they are recyclable.

The Merrill Center may be the world's 'greenest' building. It is the first to receive the U.S. Green Building Council's Platinum rating for Leadership in Energy and Environmental Design (LEED). But it does more.

With a view of the Chesapeake Bay and Black Walnut Creek, the Merrill Center connects us with the Bay we're trying to save. Students, teachers, volunteers,

decision-makers, and visitors learn about the Bay and techniques to protect and restore it.”

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- **John M. Langston High School** in Arlington, Va. is among the first schools in the country to be certified “green” by the U.S. Green Building Council.

From [www.arlington.k12.va.us/facilities/design/langston.shtml](http://www.arlington.k12.va.us/facilities/design/langston.shtml)

“The new Langston-Brown Facility is the latest of a number of joint use facilities located throughout the County. The building is shared among three users: Arlington Public Schools (Langston High School Continuation Program), Arlington County Department of Parks and Recreation (Community Recreation Center) and Head Start/ACAP (Arlington Community Action Program).

The project included the complete demolition of the old 23,500 square foot Langston-Brown facility and the construction of a new, approximately 50,000 square foot facility. Also included in the scope of work were various site amenities, such as a new parking lot, sidewalks, hard and soft play areas and a limited amount of open green space. The project construction budget was approximately \$7,500,000. This new Facility is the first Arlington Public Schools (APS) facility to attain a LEED (Leadership in Energy and Environmental Design) certification. The United States Green Building Council (USGBC) has instituted the LEED program as a way to recognize buildings that are environmentally friendly.

LEED certification is obtained, using LEED guidelines, through careful consideration of materials, systems and processes that go into the design and construction of a building. The entire project team, led by APS Design and Construction Staff, from project architect Beery Rio Associates, to the construction management team from Hess Construction, to the general contractor, John C. Grimberg, Co. worked closely to achieve this LEED certification.

The project commenced with the demolition of the former facility in the spring of 2002. The new Langston-Brown Facility was completed for the start of the school year in September 2003.”

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- LEED-certified **Blair Towns** in Silver Spring, Md. represents a sustainable approach to multi-family development. This 78-unit apartment community was built with 40% recycled content and 60% regionally manufactured materials.

From [www.greenerbuildings.com/case\\_studies\\_detail.cfm?LinkAdvID=62811](http://www.greenerbuildings.com/case_studies_detail.cfm?LinkAdvID=62811)

“The new Blair Towns at the Blairs represent a ‘Smart Growth’ approach to multi-family development. This 78-unit apartment community, comprising one 4-story building and two 3-story buildings, was built on a surface parking lot located on a portion of the Blair property, a mixed-use urban site in downtown Silver Spring, Maryland with existing apartment buildings, shops, and a variety of parking facilities. The Blair Towns apartments offer the added value of variety in unit types and high-end interiors.

The entire Blair Park site is transit-oriented, located near a major Metro rail station and bus lines, with convenient storage for bicycles and a measured walking path

around the perimeter of the site. In addition to its transit-oriented, urban infill land-use, the Blair Towns reduce site-related impacts by meeting strict Maryland standards for erosion and sediment control and treatment of stormwater runoff, thereby reducing detrimental impacts to the Chesapeake Bay. The drought-tolerant landscape plantings eliminate the need for an irrigation system, and the buildings use 30% less water than conventional apartment buildings, thanks to a combination of ultra-efficient showerheads, faucet aerators, and Energy Star clothes washers and dishwashers. The efficient lighting, HVAC system, and thermal envelope also save over 20% base building energy use.

This project, and several others, are served by a landmark green power purchase made by the Tower Companies in 2003. Over 40% recycled-content materials and over 60% regionally manufactured materials (excluding equipment) were used, and ample space is provided for occupant recycling. Wood-efficient framing and the use of finger-jointed lumber minimized the total amount of wood used for the structure. Indoor air quality was protected during construction, and all finish materials are low-emitting. A comprehensive user-education program helps Blair Towns residents appreciate and make the best use of their new green apartments and site."

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### To explore further

- [www.usgbc.org](http://www.usgbc.org) — The U.S. Green Building Council is the nation's foremost coalition of leaders from across the building industry working to promote buildings that are environmentally responsible, profitable, and healthy places to live and work.
- [www.greenhome.org](http://www.greenhome.org) — GreenHome demonstrates and promotes affordable, sustainable design, construction, and landscape practices for homes and communities throughout the Washington, D.C. area. GreenHome is also committed to expanding awareness of green practices beyond its buildings, into the community of homeowners, home renters, home builders, and the general public.
- [www.greenerbuildings.com](http://www.greenerbuildings.com) — GreenerBuilding's mission is to provide resources that companies can use to understand and promote positive, cost-effective practices that improve buildings' environmental performance while simultaneously reducing costs and negative health impacts.
- [www.buildinggreen.com](http://www.buildinggreen.com) — BuildingGreen is an independent company committed to providing accurate, unbiased, and timely information designed to help building-industry professionals and policy makers improve the environmental performance, and reduce the adverse impacts, of buildings. BuildingGreen is the publisher of *Environmental Building News*.
- [www.sbicouncil.org](http://www.sbicouncil.org) — The Sustainable Building Industries Council is an independent, nonprofit organization whose mission is to advance the design, affordability, energy performance, and environmental soundness of America's buildings.
- [www.edcmag.com](http://www.edcmag.com) — *Environmental Design and Construction Magazine* features information on green building techniques and materials.