

Building Green for the Future

Case Studies of Sustainable Development in Michigan

Everett Marshall Building, Ypsilanti



UrbanCatalystAssociates

Zeb Acuff • Aaron Harris • Larissa Larsen • Bryan Magnus • Allyson Pumphrey

University of Michigan
Ann Arbor, Michigan

June 2005

The heart of the Everett Marshall Building seamlessly integrates material use (linoleum, recycled plastic fabrics), lighting efficiency (skylights, open floor plans), and social opportunities (common seating areas, long views).





Ypsilanti, Michigan

Everett Marshall Building

Project type	Educational
Project scale	Building
Construction type	New Construction - Urban Infill
Date completed	August 2000
Address	Eastern Michigan University, Ypsilanti, MI
Subjects	Materials Use
	Social Benefits
	Funding Sources
	Energy Efficiency
	Lessons Learned
Total project costs	\$14 million; interiors and technology: \$2.2 million
Building square footage	75,000 sq. ft.
Cost/square foot:	\$187/sq. ft. (overall) \$29/sq. ft. (interiors and technology)

History

An early example of green development in Michigan, the Everett Marshall Building at Eastern Michigan University (EMU), exemplifies for students, faculty, and visitors the sound principles of universal design and environmental sensitivity. The building opened in the fall of 2000, and although the shell of the building was not constructed to be green, the designer and project team extensively researched sustainability and indoor air quality issues for the FF&E (furniture, fixtures, and equipment).

Louise Jones, a professor of Interior Design at EMU and creator of the interior plans for the Marshall Building, was motivated by environmentally responsible design, a concept that combines sensitivity to human health issues with concern for ecological health. The philosophy of universal design meets and surpasses the Americans with Disabilities Act compliance regulations and underlies the plans for the Marshall Building, setting it apart as a unique example of sustainable development in an institutional context.

“Five years ago, the cost of green building came at a higher premium, but now a lot of green products are comparable [in price] with traditional products.”

Lynn Rogien

Materials Use

For the Marshall Building, the design team carefully selected sustainable flooring and furnishing materials. These materials were chosen based on their recycled content, their ability to be recycled in the future, and the sustainability of their production methods. In some cases, the green materials chosen for the project were less expensive than their traditional counterparts because they were made from materials diverted from the waste stream. Ordering green materials in 1998 was challenging, says Jones, because nobody was familiar with them; today the challenge arises from a company's tendency to **greenwash** their products, leaving the consumer with the responsibility to search out the best sustainable materials.

The variety of environmentally responsible flooring materials used throughout the Marshall Building illustrates the durability and attractiveness of going green. Cork flooring provides excellent insulation and sound absorption properties and lasts for decades without showing significant wear. A renewable resource, cork is sustainably harvested from live trees and can be re-harvested every 10 years for approximately 200 years. Similarly, bamboo grows rapidly and is continually harvested to provide attractive, stronger-than-steel flooring planks. Linoleum, used in the high-traffic hallways of the Marshall Building, incorporates renewable natural components into long-lasting flooring material with natural bactericidal properties.

Madera tile, a wood composite material, looks like natural slate without the weight, brittleness, or cold feel of stone. These tiles are harder than hardwood flooring, moisture-proof, and warranted for durability. The bathrooms of the Marshall Building feature textured Crossville Eco-Cycle tile, a porcelain tile made from 95% factory-recovered waste clay. The manufacturer offers this easy-to-clean, attractive tile at a reduced cost because it is generally considered production waste.

Office cubicle partitions from Knoll's Equity product line incorporate recycled and recyclable materials, including gypsum substrates and fabrics made from pop bottles, all constructed without harmful adhesives. Metal surfaces of cubicles, tables, and chairs feature a powder-coat finish that reduces wasted paint during production. Desktops in faculty offices are either **biocomposite** materials or recycled urban wood (i.e., shipping pallets) sealed to prevent **off-gassing**. Most of the office chair fabrics and frames were once pop bottles. The suppliers shipped the furniture using blankets as protection, removing the need for packaging waste.

Linoleum flooring made from linseed oil, wood flour, and pine rosin presents a durable and attractive appearance in hallways and common areas.



greenwash - Also called faux green; to falsely claim a product is environmentally sound.

biocomposite - A synthetic material composed of various natural components.

off-gassing - The emission of chemical compounds from a newly-painted, finished, carpeted, or furnished room into the air.

In this office area, recyclable cubicle elements, biocomposite desktops, and Solenium flooring surround occupants with green materials.

The DesignTex Corporation in cooperation with William McDonough, an industry leader in sustainable design, created many of the fabrics used throughout the Marshall Building. In typical fabric processing, over 8000 chemicals are used; of these, only 32 chemicals have no adverse effect on human or environmental health. The wool-and-ramie chair fabric in the Marshall Building furniture uses these green chemicals. Waste from this fabric production process becomes garden mulch and is fully compostable.



Solenium, “resilient textile flooring” from Interface, looks like carpet but behaves like tile: it can be vacuumed and wet-mopped and provides an attractive floor for Marshall Building office areas. Solenium is produced from recycled materials and can be completely recycled as Solenium flooring. In fact, Eastern Michigan University leases the floor from Interface, which collects the tiles, separates the layers, and creates new product after the useful life of the existing system.

Social Benefits

A primary motivator for the interior design of the Marshall Building was the concept of universal design. Moving beyond the requirements of the ADA or the accommodations of barrier-free design, universal design seeks to allow all persons, regardless of ability, weight, height, or age, equal access to a facility and its amenities. As implemented in the Marshall Building, this concept appears in the selection of wider doorways, height-adjustable chairs and tables, bi-level teaching podiums with two sets of controls for educational technology installations, easily-movable classroom furniture, and open-access areas in lecture halls where fixed seating predominates, in addition to typical installations such as an elevator and accessible bathrooms.

Universal design is also concerned with maintaining high indoor air quality (IAQ) levels. The most basic solution for IAQ is to use paints that contain low levels of volatile organic compounds (VOCs), which do not release harmful chemicals into the closed indoor environment. Low-VOC flooring adhesives, interior paints, and furniture finishes help maintain good IAQ. In the Marshall Building, mold-inhibiting ceiling tiles and a voluntary fragrance-free policy for those in the building maintain indoor air quality at a higher level than outside the building (based on OSHA tests).

VOC - Volatile organic compounds; Secondary petrochemicals which evaporate readily into the atmosphere at normal temperatures. They include light alcohols, acetone, trichloroethylene, perchloroethylene, dichloroethylene, benzene, vinyl chloride, toluene, and methyl chloride. These potentially toxic chemicals are used as solvents, degreasers, paint thinners, adhesives, and fuels and contribute significantly to photochemical smog production and certain health problems. Signs and symptoms of VOC exposure may include eye and upper respiratory irritation, nasal congestion, headache, and dizziness.

Funding Sources

The sustainable interior design of the Marshall Building faced a double hurdle from a financial perspective. At the time of construction, state universities faced state-imposed budget restrictions. Additionally, green materials were relatively new to the building market and only available at higher costs. The University was willing to pay for standard materials, but the designer wanted environmentally responsible materials. The project manager, The Christman Company, offered to double-bid traditional and green materials to demonstrate cost differences.

Upon seeing the cost comparisons, the University funded some of the green materials; a private grant for the construction of the building covered many of the other material costs. "Five years ago, the cost of green building came at a higher premium," says Christman's Lynn Rogien, "but now, a lot of green products are comparable [in price] with traditional products." Low-VOC paints do not cost appreciably more than regular paints; the cost difference in flooring materials varies, but life cycle costs need to be included in the comparison.

Energy Efficiency

Energy efficiency is a wise choice when working within a tight budget. Up-front investments in efficient lighting and heating systems save costs and reduce energy demand. In addition to daylight meters and occupancy sensors that turn off lights, building and interior design contributes to efficient energy use. In the Marshall Building, office floors are different colors (green or gold) throughout the building; darker floors absorb solar heat while lighter floors prevent sunny offices from becoming uncomfortably warm. The two main entrances to the building incorporate double-door airlocks that minimize heating and cooling loss, and a prominent central staircase encourages students, faculty, and staff to use human energy instead of an electrical-powered elevator to move between floors.

Lessons Learned

One challenge still faced by the occupants of the Marshall Building involves the regular cleaning and maintenance of the environmentally responsible building. As is typical in an institutional setting, custodial services change periodically as the University continually bids out the work. Due to the nature of the green materials (e.g., no need to wax some floors) and the desire to maintain healthy indoor air quality, new custodial crews must learn the proper use of green cleaning products.



The prominent location of this recycled-rubber staircase encourages walking instead of elevator use.

"If the project team takes a system-wide, integrated approach to green materials and considers life cycle costs, LEED silver [certification] can be attained at little to no cost increase."

- Lynn Rogien

The Bottom Line

As demonstrated by the Everett Marshall Building, environmental responsibility can be incorporated into a tightly budgeted project. “Green materials don’t cost more to use,” says Lynn Rogien, “if you are smart about their use and take the time to get educated. If the project team takes a system-wide, integrated approach to green materials and considers life-cycle costs, LEED silver [certification] can be attained at little to no cost increase.” Knowing why an individual wants to pursue green development (e.g., energy efficiency) and stressing this reason throughout the renovation process leads to successful projects.



Home to the College of Health and Human Services at Eastern Michigan University, the Marshall Building boasts an environmentally responsible interior design and the distinction of being a Michigan green building pioneer.

Educational signage displayed throughout the building informs occupants of the benefits of green development.

Contact Information

Client	College of Health and Human Services, Eastern Michigan University, Ypsilanti, MI
Contractor	Lynn Rogien, The Christman Company, Lansing, MI, (517) 482-1488, lynn.rogien@christmanco.com
Interior Designer	Louise Jones, Arch D., LEED AP, Interior Design Program Director, Eastern Michigan University, Ypsilanti, MI, louise.jones@emich.edu

References

Guerin, Denise, Louise Jones and Delores Ginthner. (2004). “Environmentally Responsible Interior Design: A Case Study.” *eJournal of Interior Design*, 30(3).

Urban Catalyst Associates

Urban Catalyst Associates

Urban Catalyst Associates (UCA) is an interdisciplinary team of recent University of Michigan graduate students who have combined their experiences, interests, and educations to create a positive impact on the future of the State of Michigan. The team holds a strong passion for fostering innovative, sustainable development that will shape the evolution of the new urban environment.

In collaboration with the Michigan Department of Environmental Quality, Urban Catalyst Associates developed this handbook to serve as inspiration and ready reference to the development community and other interested groups. As the State furthers its investment in green development, the UCA team hopes that this handbook will encourage developers to infuse elements of environmental sustainability into their planning and development processes.

Urban Catalyst Associates can be contacted via email at uca@uca-michigan.com. See the contact information below for information on contacting individual team members.

Zeb Acuff

Zeb holds Master's degrees from the School of Natural Resources and Environment and the Taubman College of Architecture and Urban Planning, both at the University of Michigan in Ann Arbor. He is also a 2001 graduate of the College of Agriculture and Natural Resources at the University of Delaware. Zeb has extensive experience in farmland preservation and local planning research, as well as familiarity working with demographic and social science media. His professional interests include parks and recreation planning, non-motorized transportation, trails and greenway development, and public transit systems. Zeb and his wife currently reside in Dexter, Michigan. Zeb can be contacted via email at zeb@theacuffs.com.

Bryan Magnus

Bryan graduated from the University of Michigan in April, 2005, with an MBA from the Ross School of Business and a MS from the School of Natural Resources. His undergraduate degree is in Finance and Actuarial Math from Bryant University in Smithfield, Rhode Island. Bryan has extensive knowledge of socially and environmentally responsible business with an emphasis on renewable energy and alternative transportation. He has interned with General Motors' Fuel Cell Activities Group as well as Honeywell's Transportation Systems, and is currently employed by Honeywell TS as a Marketing Analyst. Bryan, his wife Lynn, and their "child" Meadow (dog) live in Ann Arbor, Michigan. Bryan can be contacted via email at magnusb@umich.edu.

Aaron Harris

Aaron will complete his final year at the University of Michigan in spring 2006 with both an MBA from the Ross School of Business and an MS from the School of Natural Resources and Environment. Prior to Michigan, Aaron co-founded Harris Brothers LLC, a real estate development/management company based in Chicago and focused on green building design and environmentally sensitive renovation projects. Upon completion of graduate studies, Aaron plans to return to the real estate field to pursue urban brownfield redevelopment projects. Aaron graduated from the University of Wisconsin-Madison with a BA in Sociology (Honors) and a Certificate in Environmental Studies. Aaron can be contacted via email at aaronmh@umich.edu.

Allyson Pumphrey

Allyson graduated from the School of Natural Resources & Environment with a Master's degree in Landscape Architecture in April 2005. Prior to attending the University of Michigan, she received her BS in Landscape Horticulture & Design from Purdue University in West Lafayette, Indiana. Allyson has experience in residential site design and urban redevelopment projects. Her professional interests include urban trails and greenways, brownfield redevelopment, and urban design. Allyson is employed by InSite Design Studio, Inc. in Ann Arbor, Michigan. Allyson can be contacted via email at apumphrey@insite-studio.com.

Larissa Larsen

Larissa Larsen, Ph.D., is an assistant professor with positions in both the School of Natural Resources and Environment and the Urban Planning Program at the University of Michigan. Larissa has a Master's in Landscape Architecture degree from the University of Guelph in Canada and a Ph.D. in regional planning from the University of Illinois at Urbana-Champaign. Prior to becoming a professor, Larissa practiced landscape architecture and urban planning in Chicago. Her current research investigates the ecological and social impacts of urban settlement patterns. Larissa can be contacted via email at larissal@umich.edu.