



THE UNIVERSITIES AT SHADY GROVE

WHERE EDUCATION TRANSFORMS



*He likes
small class
size.*

*She likes
getting a
degree
from UMB
but only
driving to
Rockville.*

*She likes
that
everyone is
a transfer
student.*

*She likes
being able
to balance
class and
work.*

*He likes the
connection
to careers in
the area.*

**More than 50 degree programs
from 8 leading Maryland institutions
at 1 convenient location in Montgomery County**



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THE UNIVERSITIES AT SHADY GROVE



Camille Kendall Academic Center Shady Grove III

Building for a Sustainable Future

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Welcome to the Universities at Shady Grove (USG). As an innovative University System of Maryland (USM) campus we have designed the new centerpiece of our campus, the Camille Kendall Academic Center (SG III) to be both energy efficient and environmentally sensitive. It is the largest *green* higher education building in the state of Maryland, and one of the first USM buildings to achieve Leadership in Energy and Environmental Design (LEED®) Gold certification through the U.S. Green Building Council. This building was designed to demonstrate our environmental stewardship while enabling our campus to triple student enrollment, add new degree programs and faculty, and provide educational resources for our community.

Why Build Green?

Buildings have a huge impact on our environment. According to the U.S. Department of Energy, buildings in the United States consume more than 30% of our total energy and 60% of our electricity annually. They are also a major source of urban air pollution and contribute to climate change.* As a result of our *green* design, USG expects to conserve energy, water and other natural resources, and reduce its environmental impact.

*Source: LEED® Reference Guide for New Construction

Project Consultants

Project Management

University of Maryland
Department of Architecture,
Engineering and Construction
College Park, Maryland

Architect/Engineer

CANNON DESIGN
Baltimore, MD

LEED Consultant

Sustainable Design Consulting
Silver Spring, MD

Furniture, Fixtures & Equipment

University of Maryland
Department of Architecture, Engineering
and Construction
College Park, Maryland

Construction Manager

SKANSKA
Rockville, Maryland

Useful Terminology

Building Footprint – The land area taken up by a building.

Carbon Footprint - is a measure of the amount of carbon dioxide or CO₂ emitted through the combustion of fossil fuels. This can be applied to an organization, business or enterprise, as part of their everyday operations; to an individual or household, as part of their daily lives; or to a product or commodity in reaching market.

Chlorofluorocarbons (CFCs) – Hydrocarbons frequently found in air conditioning units that deplete the stratospheric ozone layer.

Conservation – Making efficient use of our natural resources.

Energy Star – A federal program established in 1992 by the U.S. Environmental Protection Agency to identify and label energy efficient appliances for consumers. Energy Star labels are found on over 40 product categories and according to the EPA save consumers billions of dollars on energy costs annually.

FSC – Forest Stewardship Council, an international organization established to monitor the management of forests worldwide, promote sustainable forestry practices, and assist the consumer in the purchase of wood materials harvested from rapidly renewable sources.

Green – A term used to describe any actions, devices, or strategies that help to conserve the Earth's resources.

Heat Island Effect – Refers to the heat generated in urban settings, when buildings absorb more heat than the surrounding natural land areas as a result of solar energy retention on constructed surfaces. Principal surfaces that contribute to the heat island effect include streets, sidewalks, parking lots and buildings.

HVAC Systems – Includes heating, ventilation, and air conditioning systems used to provide thermal comfort and ventilation for building interiors.

Indoor Air Quality – Refers to the presence or absence of air pollutants in buildings or conditions that can affect the health of a building's occupants. Sources can include radon, tobacco smoke or chemicals in paints, carpeting or other installations.

LEED® – Leadership in Energy and Environmental Design, a set of national standards by the U.S. Green Building Council for constructing high-performance, sustainable buildings.

Renewable Energy – Energy derived from sources that do not deplete natural resources, including solar, wind, and geothermal energy.

Rapidly Renewable Natural Resources – Natural materials, such as bamboo or flax, that are fast-growing and can be harvested easily

Storm Water Runoff – Water generated during rain and snow that flows over urban surfaces into sewer systems or receiving waters. All precipitation that leaves project site boundaries is considered to be storm water runoff. May contain sediment and contaminants that can pollute receiving waters.

Sustainability – The concept of ensuring that activities can be conducted without damaging or misusing natural resources.

Source: U.S. Green Building Council, National Building Museum, National Resource Defense Council

Campus Map



What is LEED Certification?

The U.S. Green Building Council (USGBC) was formed in 1993 to foster a new generation of high-performance, energy-efficient buildings. After several years, it developed the LEED® Green Building Rating System to measure a building as *green*. The rating system is performance-based, and points or credits are earned for each *green* feature that is successfully met. The more credits earned, the higher the ranking. **The criteria are organized into six categories:**

- **Sustainable Sites** – reduced land disturbance, storm water controls, landscaping, reduced light pollution, alternate transport options, and urban redevelopment.
- **Water Efficiency** – efficient wastewater technologies, methods to reduce water use, landscaping with native species with low water needs.
- **Energy & Atmosphere** – use of renewable energy sources, high-performance building equipment, energy efficient appliances, alternative fuels.
- **Materials & Resources** – use of local/regional materials, recycling construction waste, onsite recycling, use of materials with recycled/rapidly renewable content, and environmentally harvested wood.
- **Indoor Environmental Quality** – efficient ventilation, use of materials with low/no toxic emissions, non-toxic cleaners, provisions for thermal comfort and use of daylight.
- **Innovation & Design Process** – use of accredited LEED® professionals, environmental education program, and new concepts in design and technologies.*

Applicants prepare a scorecard listing all the credits they have met, and submit the documentation to the USGBC. Following USGBC's review, the building is awarded a LEED® certification and plaque based on the total credits earned. LEED® ratings start with Certified (26-32 points) and proceed to Silver (33 to 38 points), Gold (39 to 51 points), and Platinum (52 points and above).

*The Universities at Shady Grove has achieved **GOLD** certification under the LEED® program.*



U.S. Green Building Council
 Phone: 202-82-USGBC
 Website: <http://www.usgbc.org/>

*Source: LEED® Reference Guide for New Construction

Environmental Design Features

Sustainability was important to Shady Grove for reasons beyond conserving energy. From the very beginning of the design process all decisions were made keeping sustainability in the forefront, while staying in budget. Below are the many environmental designs the project team incorporated into the facility as part of the LEED® process.

Sustainable Site

- Public access to commuter bus lines serving the campus
- Bicycle storage and on-site shower facilities for cyclists
- Water run-off and site disturbance reduced by limiting paved parking
- Reduced site disturbance by stacking building program; minimizing footprint
- Highly reflective roofing materials and vegetated green roofing reducing heat-island effect
- Electric vehicle charging station promotes use of alternative-fuel vehicles
- Seventeen (17) car pool parking spaces provided
- Water efficient landscaping and high efficiency irrigation technology

Indoor Environmental Quality

- East-West orientation of building wings minimizes heat gain and maximizes southern exposure
- 75% of all occupied spaces have access to natural daylight
- No smoking policy
- Carbon dioxide monitoring system provides feedback on ventilation performance
- Indoor air quality management plan during construction implemented
- Two week building flush-out conducted before occupancy
- Low VOC-content in all paints, carpets, composites, adhesives, and sealants



Materials and Resource

- Dedicated area for storage and collection of recyclable materials
- 83% of collected construction waste recycled or reused
- 25% of materials used were of recycled content
- 48% of building materials were manufactured regionally
- 82% of all wood-based materials are Forest Stewardship Council certified

Teaching About Sustainability

The United Nation has declared 2005-2014 a Decade of Education for Sustainable Development. As educators, we have a responsibility to inform our students, faculty and surrounding community about the benefits of sustainability. Some of our educational initiatives include:

- Self-guided tours through SG III and grounds
- Tours for schools and large groups
- Graphic displays detailing the eco-friendly features of our building
- Energy Monitoring System in the lobby of Building III
- A sustainability link on USG website highlights the building's *green* features
- Comprehensive recycling programs throughout campus
- An active *green* committee that researches new, successful environmental practices and implements strategies as appropriate at USG
- USG is working with Montgomery County Public Schools, Montgomery College and our University Partners to develop curriculum to use SG III as a laboratory for *green* buildings and high performance systems

“For many reasons, higher education has a pivotal role to play.... Our campuses are small cities surrounded by communities, which partner with us and often model our operations. We nurture the bright young people who will be teachers, scientists, engineers, businessmen, and lawyers—and who live their personal and professional lives based on values learned while in college.”

Terry Calhoun and Anthony D. Cortese
Society for College and University Planning

Other Noteworthy Places

The Atrium

The atrium, which connects three floors of faculty and staff offices, was designed to encourage a collegiate atmosphere promoting interaction amongst faculty, staff, and students. Its large skylight and openness provides interior spaces with a generous amount of natural daylight.



Executive Conference Room

To make our conference room more eco-friendly, we ordered a custom-made conference table using recycled materials. The inset is constructed of recycled solid surface material made of post-industrial scrap aluminum chips, and is locally manufactured. All surrounding wood is FSC certified wood. The furniture has no added urea-formaldehyde, a toxic chemical often used in particle board. Bi-products from the finishes are sent out to another company for proper disposal. The conference room chairs meet EPA air quality regulations and are also made from non-endangered wood.*

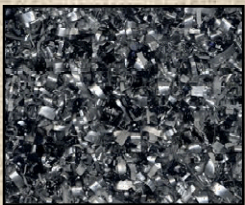


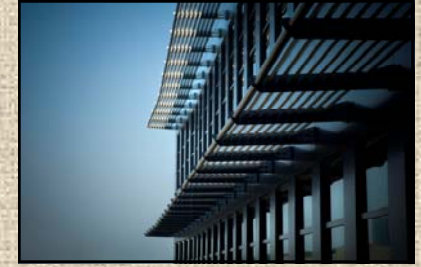
Table Inset



*Lees product information

Energy and Atmosphere

- Building systems commissioning verifies implementation and performance
- No ozone-depleting CFC-based refrigerants used
- HCFC-free and halon-free refrigeration and fire suppression equipment prevent ozone depletion
- Low-E coated glass reduces energy costs utilized throughout facility
- 30% reduction in design energy costs
- Measurement and verification provided through meters installed on electric, water and gas
- Exterior solar shades on south facing windows



Water Efficiency

- Water-efficient plumbing fixtures, such as ultra low-flow urinals and faucets, dual flush toilets, reduce potable water usage 41% below baseline models
- Elimination of permanent site irrigation system reduces potable water usage
- Use of hardy and/or native vegetation minimizes irrigation requirements
- Vegetated green roofing system reduces storm water runoff by 25%

Innovation and Design

- 40% of building materials are regionally manufactured, exceeding LEED® standards
- Developed and implemented a green building user education program
- Green housekeeping, operations and maintenance plan developed
- Potable water usage reduced by 41%, exceeding LEED® standards

Other Interesting Facts

- Parking lots, walkways, and sidewalks are constructed with special reflective and impervious materials in order to further reduce heat build-up associated with buildings
- Constructed on an existing paved area so there was minimal disruption to the natural environment

The Grounds of Building III

Protecting Surrounding Environment

To minimize the degradation of the environment during the excavation process, top soil and trees that were removed during construction were stored, reused, or replanted in other areas of the campus. Trees that had to be removed were recycled into mulch.

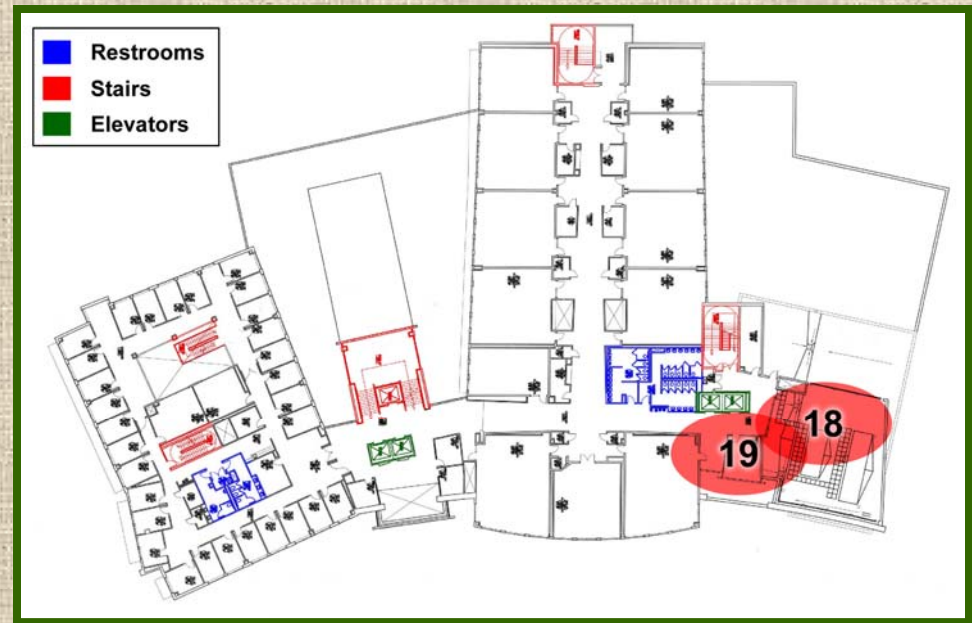


In the garden areas, native plant species were chosen because they require less water, are more tolerant to local weather conditions, and are more resistant to disease. Look for plants such as Black-Eyed Susans and Daylilies throughout our campus.

A high efficiency irrigation system was added reducing the consumption of our potable water by 50%.

Green Roof

The green roof is located on the west side of the building, above the Library. Besides the obvious aesthetics of a green roof, there are also many benefits. For example, it helps to offset and reduce heat generated from the building, reduces storm water runoff that carries pollutants to the Chesapeake Bay, and reduces noise pollution. The roof also improves air quality by producing oxygen and absorbing carbon-dioxide emissions. We chose succulent plants, such as cacti, to minimize maintenance (i.e. the need for frequent watering). It also provides a natural habitat for birds and insects.



4th Floor

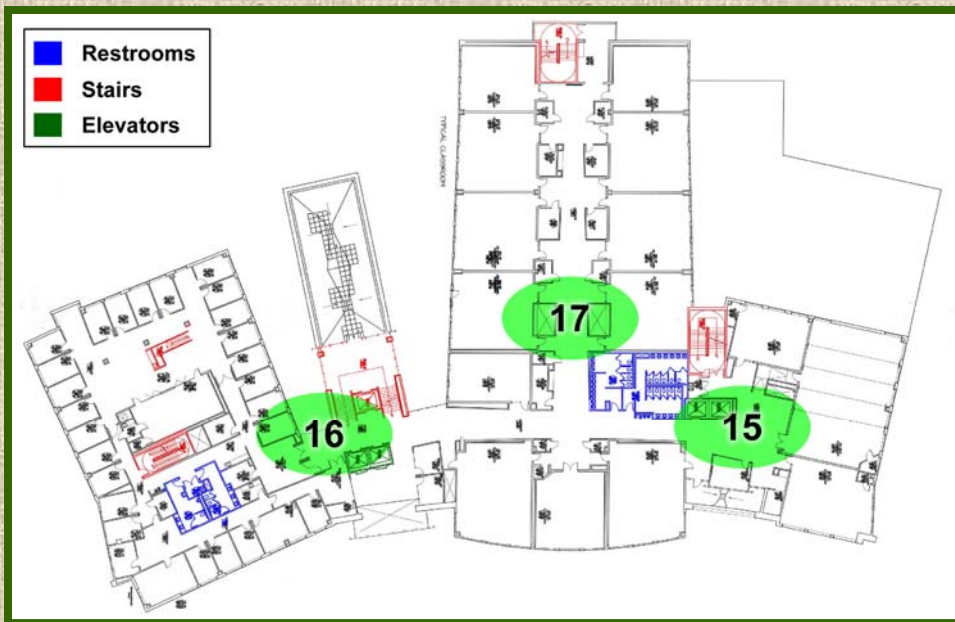
18. **HVAC System** - If you look out the window, you can see the HVAC system. An estimated 70% of a building's utility costs are related to the operation of HVAC systems. Our building has several *highly efficient* components that reduce the building's impact on our eco-system, such as:



- Use of variable frequency drives to reduce the electrical load of our building;
- A Building Automation System (BAS) to constantly monitor overall operational efficiency;
- Equipment that meets or exceeds industry efficiency standards;
- Environmentally friendly refrigerants (HFCs) that do not contain chlorine, a chemical which does significant damage to the ozone layer.

19. **Thermal Treated Windows** - All the windows throughout the building have been treated to control the amount of energy allowed to pass through them. This significantly reduces the heat gain in the summer and heat loss in the winter, and reduces the cost of utilities and maintenance on our HVAC systems. Office windows can be opened to provide ventilation.





3rd Floor

- 15. **Linoleum** - Instead of the traditional vinyl tiles, we chose to install linoleum that is classified as *green*. Linoleum is primarily made from natural material, linseed oil, wood flour, and resin binders with jute backing. It is naturally anti-microbial, low maintenance, and highly durable. This form of linoleum is less-polluting and just as durable as traditional linoleum that relies on toxic adhesives.
- 16. **Green Roof** - Our green roof provides many benefits to the building including reducing energy consumption. For example, in the winter it helps keep the heat in, and in the summer the green roof absorbs the sunlight keeping the building cooler.
- 17. **Wheat Board** - Made from chopped wheat straw, this material looks like particle board and is resistant to moisture. It's used for wall coverings in the classroom wing of the building because it is highly sustainable.



Commons

The sidewalks and plazas are concrete, one of the most sustainable building products available. Concrete is durable and will not rust, rot or burn. It is also highly energy efficient because it can absorb and retain heat, and is useful in reducing the urban heat island effect.

The centerpiece of the Commons is our bronze sundial. It symbolizes the power and beauty of the sun as echoed in the design features of our building. This Renaissance sundial was designed by an artist in Vermont and is one of twelve, and it tells time up to a fraction of a minute.



Alternative Transportation

Bike racks, carpool parking spaces, and an electric recharging station are available on the campus. The campus boasts easy access to public transportation including the Rockville Metro (5.2 mi) and the Shady Grove Metro (5.9 mi) stations, as well as, Ride-On Bus service. Carpooling information is available on the USG website. A Campus Connector shuttle service also takes students from USG to Montgomery College and the Silver Spring Metro.



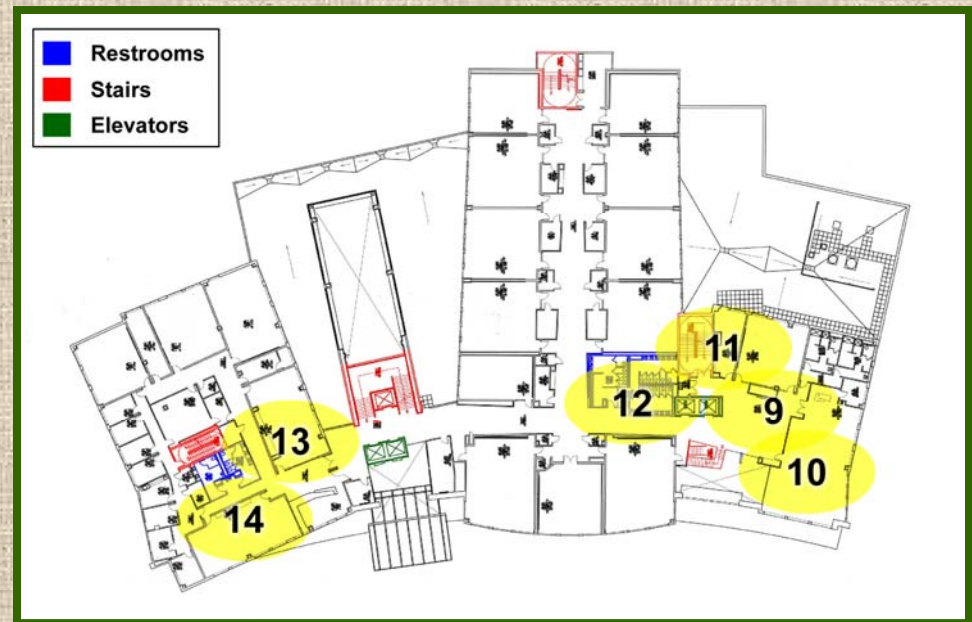
Construction Materials and Waste



Construction Wastes – At least 83% of all construction, demolition and land-clearing wastes generated from the construction of this building were recycled or sent to salvage. This ensured that recyclable materials were directed back to the manufacturing process, and less waste was sent to a landfill.



Regional Materials – USG was able to use regionally extracted material for construction of almost 50% of the facility, resulting in less pollution and fuel consumption from reduced transportation needs while helping to support the regional economy.



2nd Floor

9. **Energy Bike** - Try our energy bike, located outside the Fitness Room. This bike demonstrates how easy it is to utilize alternate forms of energy.
10. **Fitness Center** - Notice that the flooring is made of 100% recycled rubber.
11. **Green Education Room** - This room provides green news and information for staff, faculty, students and visitors. Our green roof model shows the components of a green roof, explains each layer, and its role in making a green roof perform efficiently. If you look out the window, you'll notice that this roof has a white liquid elastomeric coating. It is a reflective roofing material used to reflect sunlight thereby lowering air conditioning costs. It also meets the Energy Star roof certification program for emissivity requirements.
12. **Dual Flush Toilets/Water Sensors** - Each restroom provides dual-flush toilets and electric water sensors on the sinks as a more efficient method of conserving water.
13. **Computer Lab** - All computers and printers in our labs are Energy Star compliant. These computer systems have on-line user manuals and documentation, saving paper. All printers have duplexing (double sided printing) resulting in reduced paper usage and energy consumption.
14. **Carpeting** - All carpeting is composed of a renewable bio-based backing, environmentally-preferred nylon fiber and contains 20% post-consumer recycled content.





1st Floor

1. **LEED® Plaque** - USG meets voluntary national GOLD Leadership in Energy and Environmental Design (LEED®) standards
2. **The Energy Monitoring System** - This system allows USG to monitor our usage of electricity, water and gas, and to provide a visual indicator for comparing our use of energy and water resources.
3. **Transportation Kiosk** - This kiosk provides information on bus and metro connections in the area, and the location of carpool parking spaces, bike racks, and electric car plugs.
4. **Terrazzo Glass Flooring** - This blue and green tile is made from recycled glass products.
5. **Library Furniture and Bamboo Floors** - Bamboo is a renewable resource because it is a fast growing grass and can mature in 2-5 years. It sequesters atmospheric carbon faster than many fast-growing trees. Bamboo plantations conserve top-soil. Increased use of bamboo (instead of wood) can help preserve tropical forests and reduces the harvesting of hardwood forests. The wood veneers in the library are all FSC certified, and the core material has no added urea-formaldehyde.
6. **Library Lights** - The designers mounted task lights on the reading tables to reduce the total amount of light fixtures in the library.
7. **Energy Star** - All appliances in the kitchen and recreational lounges meet U.S. EPA's Energy Star rating as being most energy efficient.
8. **Banana Fiber Tables** - The material used for the table tops in the dining area is made from banana fiber, to showcase our commitment to sustainability in the dining area.



Recycled Building Materials – At least 25% of the materials used in the construction of the building have recycled content. The use of recycled materials reduces the environmental impact of extracting and processing virgin materials, and reduces the volume of materials sent to the landfill.



Exterior Blue Blocks - The blocks on the outside of the building contain 35% slag cement generated from ground granulated blast furnace materials. Cement is considered a sustainable material because it is produced from limestone, the most common material on earth.

Interior Design and Furnishings

Interior Design

At USG, we embraced color and style through use of innovative products such as terrazzo flooring, stained green wheat board, creative ceiling tile patterns, linoleum flooring, and bamboo flooring

- The doors are composed of FSC (Forest Stewardship Council) Certified Hardwood Maple.
- The ceiling tiles are made from approximately 40-60% recycled material.
- The wall base is rubber in lieu of more air-polluting vinyl.
- The wall coverings are made of a durable and sustainable fabric called Xorel. It has low levels of VOCs., no PVC (polyvinylchloride), chlorine, plasticizers, heavy metals, ozone depleting chemicals, topical finishes or dioxin. *



Furnishings

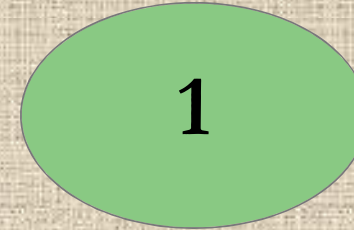
- Most furniture was manufactured by members of the US Green Building Council
- Upholstery fabrics were selected for long life, recycled content, naturally renewable materials as well as their ability to be recycled. These fabrics were also manufactured without heavy metal dyes or polluting emissions.
- Many tabletops are linoleum, a naturally healthy and renewable material. In select locations wood veneers are used, but only commonly available maple from suppliers using responsible forestry practices.
- The office furniture consists of reusable and replaceable component parts, made mainly of particle board and steel, both highly recycled materials. A portion of the assembly is performed by prison inmates in a job training program.



*Lees product information

Green Walking Tour

To fully appreciate the many environmental features of our building, please take our *green* walking tour. The following pages have a map with points of interest and descriptions. Each point of interest has a number with a colored circle around it to easily guide you through each floor.



Icons have been placed next to many of the points of interest to indicate their role in the *greening* process.

Icon Key



Sustainability



Indoor Air



Water Conservation



Recycling



Energy

Now Let's
Start Our
Tour!

