

Why VDOT is choosing sustainable building practices



VDOT's core values and sustainable building go hand in hand:

Action and Accountability: By designing and building to LEED Certification standards, VDOT is demonstrating an increased willingness to be held accountable to taxpayers to provide higher-quality services at lower long-term costs.

Results and Stewardship: This safety rest area and Information Center demonstrates VDOT's respect for the environment. LEED Certification provides concrete and measurable results to the public.

Safety and Security: Low-emitting, non-toxic building materials help ensure a safe and healthy indoor environment.

Teamwork: Successful green-building projects demand teamwork from the owner, design team and builder. By coordinating the team's ideas early, VDOT streamlined decision-making and reduced costs while creating an efficient, attractive building for travelers.

Environmental Excellence: By building green, VDOT is reducing its environmental impact. Virginia's governor is leading state agencies to meet innovative energy-savings goals. This building uses less energy, less water and fewer virgin materials than a traditional structure. It will save thousands of taxpayer dollars over its life.



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Graphic design services provided by **BAM architects**.

What you can do

1 Build to last: Think about your first cost vs. your annual cost of maintaining your home. Purchase energy-efficient and durable building products that reduce maintenance costs and provide a return on your investment.

2 Batten down: Seal around all of your doors, windows and any electrical outlets in exterior walls. If you added up all of the holes, gaps and cracks in the average American home they would add up to the area of one standard window. If not plugged, it would be the equivalent of leaving a window open year-round.

3 Light up: Replace 3 incandescent bulbs with compact fluorescent (CFL) bulbs and eliminate 300 lbs of CO₂ from the atmosphere. CFLs use 65-75% less energy and last up to 10 times longer.

4 Recycle: Recycling half of the aluminum, glass, plastic and paper you use saves 2400 lbs of CO₂ and keeps over a quarter of your household trash from going to a landfill.

5 Clean green: Use simpler, less toxic, often less expensive cleaners in your home. A small amount of white vinegar mixed with water is great for cleaning windows and mirrors.

6 Harvest the Sun: Water heating accounts for 17% of a home's energy costs. Solar Hot Water systems are now highly efficient and economical, especially with the help of a recent Federal Tax Credit for up to 30% of the cost.

7 Turn it down, turn it up: Turn your thermostat up 3 degrees in summer and down 3 degrees in winter and save 1050 lbs of CO₂.

8 Be water wise: Buy lower flow toilets and faucet aerators to reduce your water use by over 22,000 gallons per year for a family of four.

9 Wash Cool: Do 2 loads of laundry each week in cold or warm water instead of hot (and hang to dry if possible), save 500 lbs of CO₂ per year.

10 Be a Star: Purchase ENERGY STAR refrigerators, dishwashers, clothes washers and dryers. They save 10-50% in water and energy a year. ENERGY STAR lighting, heat pumps, thermostats and home electronics are also available.

For more great ideas on how to make your home greener, visit:
www.energystar.gov
www.usgbc.org
www.globalgreen.org



Travel Information - Toll-free numbers and Web sites

Call these numbers or visit these Web sites to learn about Virginia traffic conditions. (Note: TTY/TDD users should call 711)

Current traffic information

Call 511 or 1-866-MY511VA or visit 511Virginia.org

Report road hazards

Call 1-800-367-ROAD (7623) or visit VirginiaDOT.org

Other helpful numbers

Chesapeake Bay Bridge-Tunnel	(757) 331-2960
Jamestown-Scotland Ferry	1-800-VAFERRY
Virginia's E-ZPass	1-877-762-7824
Virginia State Police	(804) 674-2000
Wireless/Cellular Users	#77



For additional copies and information:

For information about other VDOT green buildings and electronic versions of their brochures, please visit www.VirginiaDOT.org and search the word "LEED."

Why Build Green?

In the United States, buildings are responsible for:

- 136** million tons of construction and demolition waste every year. That's nearly **3 lbs** a day for every American.
- 40%** of the world's raw materials—3 billion tons annually.
- 36%** of total energy use
- 65%** of electricity consumption
- 30%** of greenhouse gas emissions
- 30%** of raw materials use
- 30%** of waste output (equal to 136 million tons annually)
- 12%** of potable water consumption

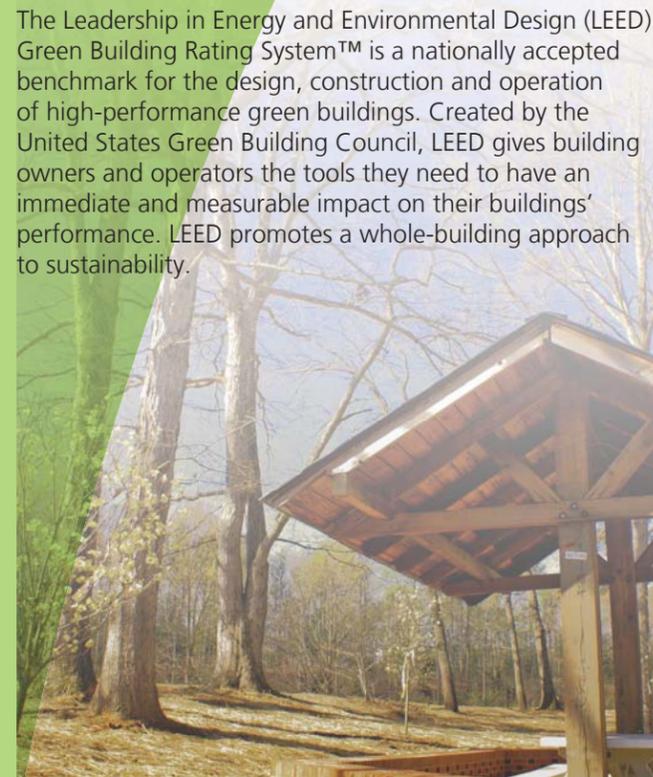
A typical **1700 sq. ft** wood frame home requires the equivalent of clear-cutting **one acre** of forest

VDOT's Answer:

By building green, we can increase the quality and life-cycle of our public transportation infrastructure, conserve energy and reduce expenditures on escalating utility costs, improve our health and reduce pollution. Better performance, longer life-cycle and lower costs create a better future for the Commonwealth.

What is LEED?

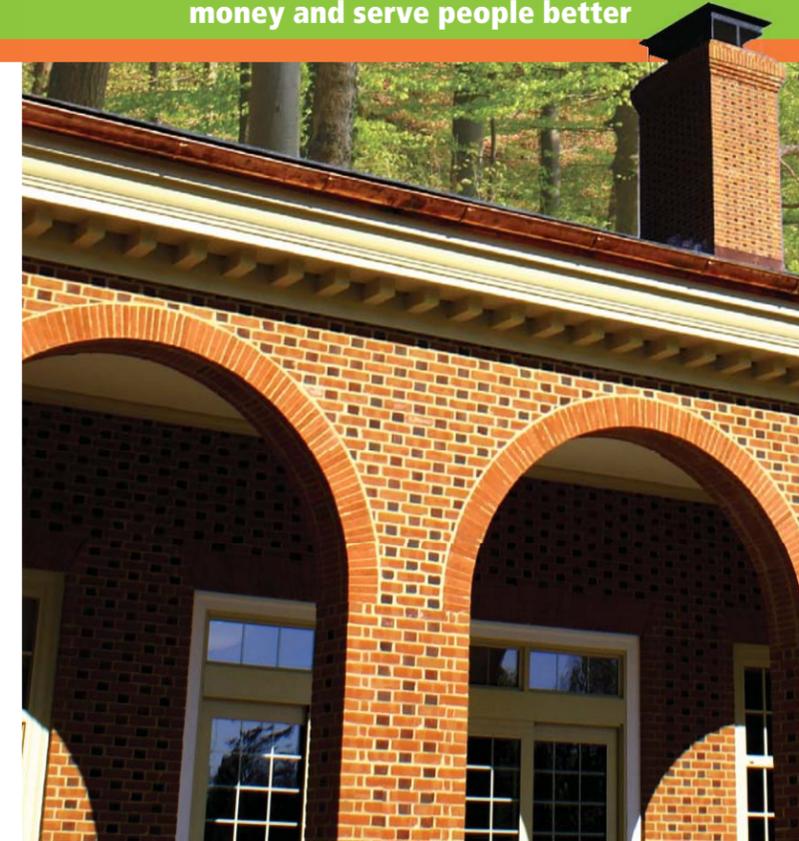
The Leadership in Energy and Environmental Design (LEED) Green Building Rating System™ is a nationally accepted benchmark for the design, construction and operation of high-performance green buildings. Created by the United States Green Building Council, LEED gives building owners and operators the tools they need to have an immediate and measurable impact on their buildings' performance. LEED promotes a whole-building approach to sustainability.



Built Green with LEED™



Sustainable buildings save energy, save money and serve people better



VDOT Safety Rest Area and Information Center (I-64 westbound, New Kent County)

This facility is designed in an architectural style that showcases the traditional colonial architecture prevalent in southeastern Virginia, as advocated by the Virginia Department of Historic Resources. Contrasting with this traditional look are the modern solutions for high efficiency and energy performance which underscore the versatility of a fully integrated sustainable building. In addition to energy-savings systems, the materials used in the modern interior and traditional exterior of the building play a critical role in achieving the sustainability goals for this facility. This VDOT Safety Rest Area and Information Center demonstrates that sustainable buildings can be created in a variety of architectural styles and still be "built green."

The completion of this project in 2007 represents the first VDOT and the first Commonwealth of Virginia owned facility to have obtained the United States Green Building Council's (USGBC) Leadership in Energy and Environmental Design (LEED) Gold Certification for high performance/sustainable building design and construction. Please use this brochure and the educational signs throughout this facility to learn more about LEED and green building practices.

VDOT LEED Team Credits
Architect/ Engineers/ LEED Designers
DJG Inc.
General Contractor
David A. Nice Builders, Inc.
Project Manager
Obsidian, Inc.
LEED/ Sustainability Consultant
Sustainable Design Consulting, LLC
Energy Consultant
EMO Energy Solutions, LLC

\$1.5 Million in estimated construction costs were saved by preserving the existing concrete pavement parking areas, most of which was constructed with the original Safety Rest Area in 1976. The parking areas were built to interstate quality standards; as such, the concrete pavement has a significant performance life cycle remaining. By keeping the original pavement, VDOT is better managing Virginia's transportation infrastructure and being a better steward of tax dollars. This preservation effort also prevented unnecessary land-clearing and helped avoid emissions from diesel-powered equipment to demolish and re-pave.

\$10,000 in estimated annual savings from a **42%** reduction in energy use versus a standard building. Efficient heating and air conditioning and interior and exterior lighting keep energy costs down. The higher efficiency systems will contribute to anticipated savings of over **\$375,000** for VDOT over 30 years when considering the anticipated escalating energy costs and maintenance and replacement costs for a standard system.



70% of the museum quality epoxy terrazzo flooring in the Safety Rest Area is made from recycled glass. Not only does this floor have tremendous long term value related to performance and low maintenance, the usage of recycled glass reduces the amount of glass going to waste, and reduces the need for quarried stone.

46.7% projected water savings (**over 1 million gallons**) annually is achieved through low-flow urinals and faucets. In addition, the urinals and toilets will use approximately **250,000** gallons of storm water from the roof for flushing. The storm water is filtered and stored in a below-ground cistern. This cuts VDOT's water utility costs in half, and reduces the burden on the storm sewer and the local water supply.

32 vertical geothermal wells use the constant temperature of the ground to assist in providing heating and cooling to the building. This system of vertical wells at a **depth of over 400 feet** is an innovative type of heat pump system. Ground source heat pumps reduce energy needs and have a life-cycle more than double a traditional HVAC system. The GSHP system also avoids any visible equipment on the roof.

1100 tons of waste were diverted from the landfill. This includes concrete, concrete masonry, brick, steel, wood, slate roofing tiles and asphalt. These were crushed for reuse, mulched or salvaged for future use.

36.7 tons of CO₂ emissions, a contributor to global warming, are estimated to be eliminated from the atmosphere over **30 years** due to the ground source heat pumps.

75% of the existing landscape and habitat was preserved to include planting of native plants in some disturbed areas. Native plants are easy to maintain and require no watering, saving money. The builder was restricted to a small "area of disturbance" to minimize damage to the landscape during construction.



100% of the adhesives, sealants, carpets and paints are low-VOC (Volatile Organic Compound). They perform as well or better than typical products, but don't have that "new smell" which is actually harmful to humans and the atmosphere.



91% of the stormwater from the parking areas is filtered by plants and soils in a bioretention basin. This improves the quality of the groundwater, surface water, the landscape and helps protect the local Chickahominy River/Rumley Marsh subwatershed and the Chesapeake Bay Watershed.

20% of the building materials are recycled. This includes concrete, roof shingles, masonry, drywall, steel, copper gutters, terrazzo and more. Recycled materials reduce the burden on landfills and the harvest of virgin materials, which helps maintain natural environments and reduce pollution.

20% of the building materials come from **within 500 miles**. Using local materials such as concrete, brick and drywall reduces transportation costs and emissions, and supports the regional economy.

100% of the cleaning products and techniques are selected for their reduced human and environmental impact. Certain chemicals are banned, and VDOT is committed to maintaining a clean, safe and healthy facility for interstate travelers.

