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Title: *Our Green Campus*
A Model for the Future

Our Green Campus– A Model for the Future

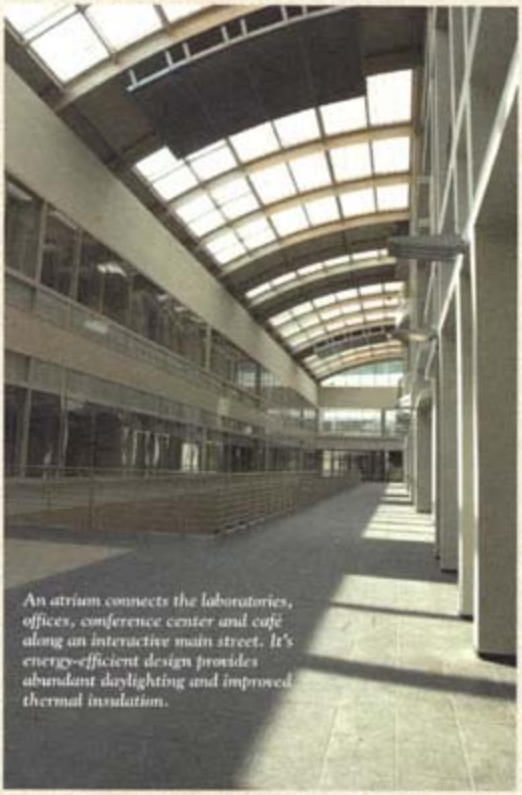
Lessons learned here may change the way buildings around the world are designed, built, and run for years to come.

EPA United States Environmental Protection Agency

Research Triangle Park Campus, NC

The Environmental Protection Agency campus in Research Triangle Park, North Carolina is one of the largest models of "green building" in the world. This award-winning campus, which incorporates hundreds of environmentally friendly features, is also the largest construction project EPA has ever undertaken. From the start, EPA set clear goals for the campus: build state-of-the-art laboratories and offices that embody the Agency's environmental mission and save the taxpayers money.

When planning began in the early 1990s, EPA quickly learned there were few green building design and construction references to draw upon. But an innovative project team—made up of representatives from EPA, other federal agencies, and the design and construction firms—steadfastly pursued its green building vision. What they learned along the way changed the project dramatically. And these lessons could very well change the way buildings around the world are built and run for years to come.



An atrium connects the laboratories, offices, conference center and café along an interactive main street. It's energy-efficient design provides abundant daylighting and improved thermal insulation.

EPA has developed this brochure in the hopes that others will learn from its experiences. The knowledge that buildings can have significant environmental impacts is well documented. In fact in the United States, 42 percent of energy use, 30 percent of raw materials, and 25 percent of water consumption are building-related. From the raw materials extracted to manufacture building goods, to the transport of those goods, to the waste created during operation and renovation, buildings impact the environment directly and indirectly in many ways.

The EPA/RTP Campus provides numerous examples of how to reduce and even avoid impacts that have been widely accepted in the past. Some of the most beneficial techniques and practices are listed here.

The 15 acres of land along campus roadways are planted with native grasses and wildflowers, significantly reducing the need for watering, fertilizing, and mowing.

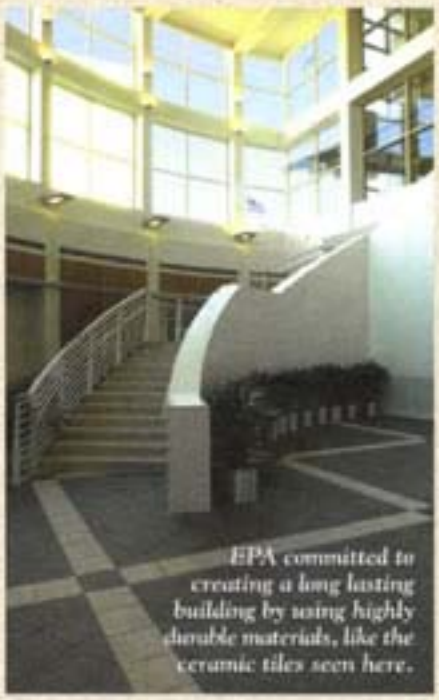
Site Design


EPA added an acre of new wetlands to the site – seven times the amount disturbed by construction.

- The buildings were placed along the natural contours of the site, reducing the need for grading and limiting disruption to existing woodlands and wetlands.
- Native grasses, wildflowers, wetlands, and forests allow all stormwater runoff to be treated naturally before flowing into local streams.
- While every effort was made to minimize land clearing, many plants would have been lost if not for a rescue effort. Volunteers transplanted more than 3,500 native plants to nearby locations.
- The surface area for roads, parking lots, and other impervious surfaces is minimized, preserving green space, reducing storm water runoff, and increasing groundwater recharge.

Building Design

- The main building uses 40 percent less energy compared to standard buildings of equal size, cutting annual operating expenses by about $1 million a year while also protecting the environment. Lighting, which includes natural daylight, automatic sensor controls, and high-efficiency fixtures, is 70 percent more energy efficient.


EPA committed to creating a long lasting building by using highly durable materials, like the ceramic tiles seen here.

- An innovative design for the atrium makes use of natural light and connects different sections of the building, conserving energy, reducing the amount of material that would otherwise be needed for exterior walls, and creating more opportunities for interaction among staff.
- A building automation system uses 25,000 sensors and controls to respond to changing heat, cooling and ventilation needs. By monitoring outdoor temperature and humidity, the system optimizes inward flow of fresh air. Variable speed pumps, fans and motors work together with variable air volume units to ensure that systems use no more energy than is needed to meet actual demands.

Construction Features

- Durability and environmental impact were key factors in selecting building materials. Products had to meet criteria for recycled and chemical content, and those made of wood had to come from sustainable sources. Durable materials and a flexible design will extend the life of the building, minimize the impact of renovations, and reduce lifetime waste.

Recycling opportunities abound. Employees can recycle in the café, in common areas, and in their own individual work space.

- An onsite system for concrete production kept 75,000 miles of truck traffic off local roads, saving 10,000 gallons of fuel, cutting air emissions, and reducing project costs.

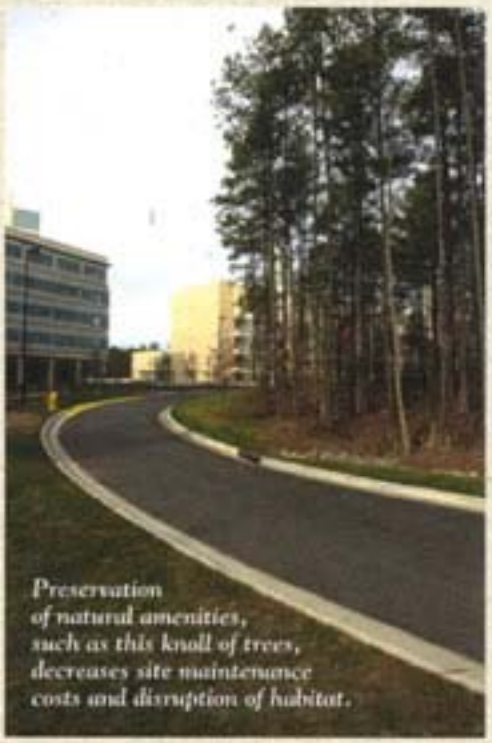
- By recycling 80 percent of construction waste, more than 8,000 tons of material were diverted from local landfills. Onsite burning of waste was prohibited to protect the air.

Operations

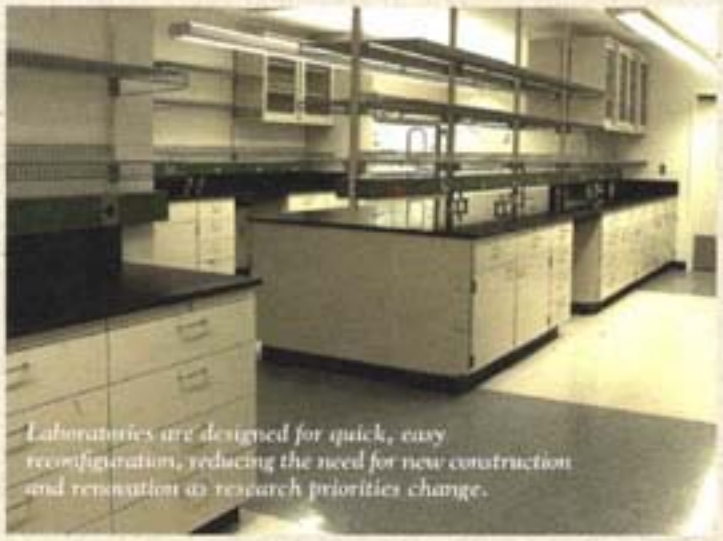
- Recycling bins and receptacles are placed in individual offices and in common areas to maximize employee recycling. Compost from the café will be reused as natural fertilizer around the grounds.

- All furnishings - from carpeting to furniture to cabinets - were selected with employee well-being and environmental impacts in mind. Routine considerations were: Does this product emit harmful chemicals? Can it be recycled? Is it biodegradable? Does the manufacturer have a "take-back" program?

- Incentives encourage staff to use car pools, public transportation and other alternatives to driving alone. In-house services, such as a restaurant, a dry cleaning service, and a convenience store, reduce driving - and the related air pollution - even further.



Preservation of natural amenities, such as this knoll of trees, decreases site maintenance costs and disruption of habitat.



Laboratories are designed for quick, easy reconfiguration, reducing the need for new construction and renovation as research priorities change.

EPA's campus has shattered the notion that environmental enhancements are too expensive to be practical. Costs can be kept in balance with environmental ideals when builders are willing to sacrifice traditional methods for new, environmentally friendly ones.

The campus has the longest stretch of solar-lighted roadway in the world.

Green Features

- 25% reduction in parking area by providing incentives for public transit and other alternatives to single occupant vehicles
- 40% more energy efficient than comparable, standard-design buildings
- 50% reduction in land clearing for roadways and utilities
- 70% more efficient lighting than standard lighting systems
- 80% of construction waste recycled
- 90% of roadway lighting fueled by solar power
- 100% capture and natural treatment of storm water runoff
- 100% elimination of ozone depleting chemicals in the central cooling system
- 200% increase in building life span - 100 years versus typical 30 to 50 years

EPA's National Computer Center was designed to achieve a "silver" rating under the U.S. Green Building Council's assessment system – Leadership in Energy and Environmental Design (LEED).

Honors:

Recognition for sustainable design and construction innovations:

White House
- *Closing the Circle Award (2001)*
- *Hammer Award (2000)*

General Services Administration
- *Model Sustainable Facility (2001)*
- *Real Property Innovation Award (2001)*
- *Planet GSA Demolition Derby Award (2000 and 2001)*

Ford Foundation/Kennedy School
- *Innovations in American Government – Top 100 (2000)*

International Green Building Challenge
- *Top-rated project in United States (1998)*

EPA United States Environmental Protection Agency

For more information on the EPA Sustainable Campus and its green building design features, please visit our web site at www.epa.gov/rtp or write to:

U.S. Environmental Protection Agency
Sustainable Campus (MD C604-05)
RTP, NC 27711

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