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From the Editor

The Future is Green

Sustainable design used to reside on the fringes of architectural practice. Granted, in the 1970s the energy crisis forced people to acknowledge the benefits of solar power and daylighting. But the “environmental” movement peaked quickly – then slipped into hibernation. It gained momentum 20 years later as people became aware of “sick buildings” and the harmful chemicals often imbedded in building products. Only recently has environmental stewardship entered the architectural mainstream. Now business and civic leaders are catching on to the fact that a green building is good for its occupants and the bottom line.

Architects have long argued that sustainable design is financially justifiable when owners consider the life-cycle costs of a building, not only the up-front construction costs. According to the National Research Council, 60 to 85 percent of a building’s real costs are related to heating, cooling, lighting, repair, and maintenance. The actual cost of construction: about 10 percent of the building’s overall cost to build and operate. To make a dollars-and-cents argument that justifies sustainable design, an owner must factor in operating costs over the life of the building to see if the aggregate reduction in operating costs outweighs the initial expense of construction. Often the savings is startling.

But it’s not just about building costs. A recent article by Steven Morton, director of HOK Consulting, argues that decision-makers can be swayed toward green design when presented with the additional benefits healthy buildings have on employee morale and worker output. Morton points out that healthy interiors increase employee productivity simply by keeping workers on the job more often. In support, he cites the case of West Bend Mutual Insurance Co., which documented a 16 percent productivity gain after a move into a new green building. The calculated value of that increase: more than $2 million a year.

Heightened awareness of sustainable design has been promoted by the U.S. Green Building Council, a national coalition of building industry leaders that encourages environmentally responsible buildings. The council created the LEED (Leadership in Energy and Environmental Design) rating system – now the standard for evaluating a building’s performance in terms of sustainable criteria. What encourages me is that these guidelines (and their underlying values) have been embraced by the General Services Administration, the agency that oversees federal building construction. GSA is explicit in its desire to reduce consumption of non-renewable resources, minimize waste, and create healthy buildings. What’s also remarkable is that the GSA policy – unlike the sort of vague pronouncement one might expect from a bureaucracy – aggressively promotes sustainable design. Beginning in the 2003 fiscal year, all new GSA building projects must meet the calculated value criteria for basic LEED certification. That’s an important commitment.

While I applaud GSA for taking the lead on sustainability, it makes me question why other agencies don’t follow suit. Think about schools, where growing children spend long portions of the day. Shouldn’t schools be healthy to occupy and economical to run? Then consider state, county, and city governments, which are among the largest employers in the state and steady clients for architects. Unlike commercial developers, public bodies tend to build with an intent to stay put for decades, so the promised return of reduced operating costs and more productive employees should make green design appealing. Meanwhile, makers of building products are rushing to satisfy new environmental standards. So with monetary savings and healthier employees at stake – along with an increasing inventory of tools available to build green buildings – there is no reason why local governments, school boards, and the Commonwealth of Virginia should not rapidly accept the challenge from GSA to build in sustainable ways. Why wait?

– Vernon Mays
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Bay Keepers
At the waterfront headquarters of the Chesapeake Bay Foundation, informed environmental practices gave rise to an innovative design solution by SmithGroup architects. By Ed Goints

Natural Selection
A new residence in Virginia Beach by William McDonough + Partners successfully blends design aspirations with the architect’s own mandate to respect the natural environment. By Vernon Mayo

Science and Light
In creating new offices for an environmental organization in the nation’s capital, Envision Design pushed to find handsome recycled materials and provide daylight to each workstation.

Low-Tech Livability
Although they didn’t set out to build the prototypical sustainable house, Reader & Swartz Architects blended common-sense design and low-tech energy solutions to create a livable residence.

Design Lines
new developments in design

House & Home
a Fan District remake in Richmond

Taking Note
doing the small thing well

On the cover: Virginia Beach Residence
Photo by Prakash Patel

In our next issue:
Urban Living:
Architecture for Architects
In the first event of its kind, teams from 14 universities competed this fall in the Solar Decathlon, producing a spectacular display of ecological awareness on the Mall in Washington, D.C. Each team designed solar houses that were judged in a 10-event competition focusing on energy efficiency, self-sufficiency, sustainability, and good design.

After the entries had been displayed publicly for ten days, the Oct. 5 announcement of the University of Colorado as the winning team came as no surprise, for they had established a formidable lead. George Douglas, a spokesman for the National Renewable Energy Laboratory, noted that Colorado’s mechanical systems were simply superior to those of the other contestants.

Conceived by the U.S. Department of Energy as a high-profile way to explore the potential of solar technologies to improve the lives of American homeowners while increasing the nation’s energy security, the decathlon was organized by the department’s renewable energy laboratory with additional private-sector support. Attracting more than 50,000 people on each of two consecutive weekends, the event demonstrated that market-ready technologies already exist for use in today’s homes.

The Colorado house scored first in three of the ten “events” and ranked no lower than sixth in all others. Winning both the “Graphics and Communication” event and the “Comfort Zone” event (which assessed the ability of the house to maintain comfort through ventilation, heating, cooling, and humidity control), and tying for first place in the “Energy Balance” event (demonstrating the house’s ability to capture all the energy needed to operate itself), Colorado surged ahead.

Team members believed their design...
went beyond mere mechanical merit. The Colorado students set out to design their solar home to prove that solar energy can work in any house — thus they eschewed an experimental look. “We wanted to show that solar design can be incorporated into just about any house,” said Colorado senior Celeste Leidich.

The home’s design was based on the BASE+ concept, a construction method that can be adapted to a home of any size on any lot. The system’s flexibility allowed the Colorado team to develop unique solutions to Solar Decathlon challenges while also creating an appealing house.

Two Virginia universities also created impressive solar houses, placing high in the rankings. The University of Virginia finished in second place, while Virginia Tech placed fifth. Both solutions showcased dramatic design and inventive technology.

The U.Va. team focused on environmental ethics and creativity. Utilizing reclaimed and sustainable materials — such as engineered lumber, birch, bamboo, copper cladding from an old roof, used auto tires, and wood reclaimed from shipping pallets — the team created a contemporary home with a rain screen, louvered window coverings, and a parapet made of photovoltaic panels. With a green roof that replaced the grass covered by the house’s footprint, a sunspace on the southern side, and a passive heating and cooling system, this solar home incorporated emerging technology.

The look created by the louvered panels and copper cladding, as well as the use of a variety of reclaimed materials, won the U.Va. team first place in the “Design and Livability” event. Like the University of Colorado, U.Va. shared first place in the “Energy Balance” competition. Their module will be available as a study center and meeting place for students, a guesthouse for visiting faculty, and as a hands-on exhibit for K-12 students.

Students from the architecture, industrial design, and engineering comprised the Virginia Tech team, which built a solar home with efficient, multipurpose systems. The design featured Skywall panels to form a south-facing translucent wall with insulating and passive solar functions.

Inside the Virginia Tech house, a luminous ceiling using a lighting technology common to backlit signs won the team second place in the “Lighting” event. Tech’s team used durable, low-maintenance materials with recycled content or sustainable sources to create an exterior that expressed the building’s technology. “We took a significant stance to celebrate photovoltaic panel technology and not try to hide it,” said Robert Dunay, AIA, associate dean at Virginia Tech’s College of Architecture and Urban Studies.

A first place in the “Design Presentation and Simulation” and the “Getting Around” events secured Tech’s fifth place finish. Next the house will be reassembled in Blacksburg to continue research focused on fine-tuning the systems. The university also is working with the Virginia Division of Energy to create an educational program for K-12 students, which would include developing interactive learning stations about the solar unit.

The Solar Decathlon put cutting-edge technology in the hands of future engineers and architects while satisfying a demonstrated public appetite for information on renewable technologies. Department of Energy officials say consumers must lead the way to widespread implementation of solar technologies. And, if interest in the solar decathlon suggests anything, it is that the public is looking to renewable energy, solar energy in particular, to provide a solution to energy needs.

Rebecca Ivey

For more information on the decathlon, visit www.eren.doe.gov/solar_decathlon/index.html.

The top finisher was the University of Colorado entry (left), which performed exceptionally.
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WebWatch
Green and Global: o2.org

Editor's note: This issue includes the second edition of WebWatch, a regular feature reviewing design-related websites. Look for more reports by Assistant Editor Rebecca Ivey, who welcomes readers' suggestions at rivey@aiava.org.

This site is eye-catching not just because of its unusual Flash design and pulsating navigation, but also for its breadth of information, which ranges from interviews, columns, and project overviews to links with books, other sites, and a global calendar of events (which is not currently functioning — ouch!). The focus of this intriguing website: sustainable design.

Impressive in scope, o2.org is the product of collaboration between the Netherlands Design Institute, a think tank exploring the economic and social contributions of design, and o2, a global network of professionals concerned with ecology. In addition to posting the musings of people at the forefront of the sustainability wave, the site provides an e-mail directory of contacts around the world, from Brazil to the Basque country.

Information on the site is well organized in three sections: people, ideas, and sources — each with manageable subcategories. In the "Ideas" section, for example, one finds a handy listing of columns (where multiple articles appear on the topics sustainable behavior and smart architecture), cases (with examples of sustainable projects), workshops (including a blow-by-blow report on the "o2 Challenge" workshop), and Factor 4 (outlining an o2 debate on a controversial system for increasing efficient use of resources). Imaginatively displayed, with smart-but-simple graphics, vivid colors, and navigation that is both dynamic and understandable, the site takes a subject that can overwhelm and makes it streamlined, manageable, even fun.

The o2.org site impresses both the eyes and intellect. Though in need of updates, the site holds up well as both a resource for designers and an example of jazzy design. A massive overhaul of the site will occur early in 2003. And though I enjoyed exploring the site, news of its bigger, badder incarnation on the way means the current o2.org has only whet my appetite.

Final grade: B
Heyn and Sandy Kjerulf have a history as patrons of the arts, a considerable art collection, and a fondness for modern architecture. When they decided to look for a home in the urban heart of Richmond for themselves and their treasures, they called Sanford Bond, AIA, a principal of Bond Hugo Farley in Richmond. “I had been in Sandy’s house at a reception,” says Heyn. “His was the only house I had seen in the Fan that I could live in, and I told him, if I ever buy one here, I want you to do it.”

The house they chose to buy and renovate was a derelict in desperate need of salvation. Built in 1892 on a corner lot in the Fan District, it was flooded with natural light through windows in its east wall and attached to the house next door on the west. It had been empty for more than 25 years, except for assorted animals, the occasional squatter, and a tree growing through the roof of the front bay. The framing was crumbling. Exposure to the elements had ruined the plaster and interior trim. The systems were unsalvageable. The roof leaked. It was perfect.

What the Kjerulfs wanted was to live comfortably and entertain gracefully in the company of their impressive art collection. They wanted an open plan, free of the physical and visual strictures of unnecessary walls. They needed a kitchen that could accommodate the two of them or catering staff without being openly visible from the rest of the house. They needed lots of storage. Heyn, a self-described technology nut, wanted concealed cables and wires everywhere. Responding to the clients’ well-developed requirements, Bond
and partner Jay Hugo transformed the prototypical 19th century townhouse into a soaring Modern environment. “You rarely get the chance to start from scratch,” says Bond. “The interior was destroyed, so we felt no qualms about gutting the house and totally changing it.”

Out of respect for the streetscape, Bond and Hugo restored the red brick exterior in its traditional form. But as one approaches the house, there are clues to the nature of its renaissance. The front garden is contained with a reductive interpretation of the low iron fences typical of the neighborhood. The entrance has sidelights and a transom, but the door and trim are flat and made of steel. And the sheltering porch roof is a thin steel plate that pierces the door frame to form a canopy inside—a graceful introduction to the extraordinary space found inside.

And how does one take out most of the walls and still have plenty of space for pictures? Bond and Hugo did it by slicing through the floors from the cellar to the roof, opening a slot along the common wall. An open staircase rises through the slot in a continuous four-story line from the back of the house, its ascent punctuated by landings at each floor. They did away with most of the rear wall and replaced it with an expanse of glass.

The simplicity of the arrangement is breathtaking. The slot creates a four-story gallery on the west wall, creating what Hugo calls a tapestry of paintings. Supported from below by steel beams, the stair is visually weightless. It is a strong, dramatic stroke—yet its effect is to reinforce the sense of openness in the narrow floor plan. The new steel skeleton that takes the place of the demolished walls is partially exposed. Beyond its structural role, the statement in steel was the architects’ way of lending order to each level and tying the spatial volume together.

That sense of continuity is expressed again in the disciplined choice of materials and treatment of surfaces, producing a quiet interior that allows the artwork to dominate. Maple used on the floors is repeated in the kitchen cabinets and stair treads. Walls and ceilings are a clean, warm white. The steel skeleton, where exposed, is painted gray.

Moving through the first floor, one feels a comfortable progression from public to private areas. The wall that once separated the front parlor and dining room has vanished, but its ghost is conjured by two sections of slightly dropped ceiling that float above the two areas like inverted platforms. The textural interest they add subtly reinforces the division of functions and helps to sculpt the space. A freestanding partition conceals the kitchen and displays a large painting as focal point.

Then something wonderful happens as one journeys through the house. The passage into the kitchen angles slightly toward the gallery wall. It threads between a long island and the open stair, widening into a small seating area. Here the floor stops short of the rear wall, contained only by a railing. What might have been a cramped, isolated kitchen becomes an interior terrace that overlooks a base-
ment den below and a walled courtyard seen immediately outside.

“The way the interior views unfold when moving through the house is analogous to moving through a natural landscape,” says Bond. By introducing that deft angle, the designers added an organic feeling and a sense of discovery to the house. The glass wall comprising the rear façade blurs the boundary between house and garden, filling the interior with light.

The same angled geometry repeats along the second floor corridor, increasing the privacy of the master bedroom at the rear and allocating more of the building’s width to a substantial closet and dressing room. Wherever possible, thickened walls satisfy the Kjerulfs’ need for generous storage. The laundry room placement off the master bath is typical of the project’s careful planning. “Of course — that’s where the clothes are,” says Heyn. He and Sandy have offices at the front of the second floor.

From the beginning, the Kjerulfs were intensely engaged in the design process. Structural engineers Dunbar Milby Williams Pittman & Vaughan worked in tandem with contractor Chip Spitzer to solve the practical demands of the design. “The glass wall was probably the biggest engineering challenge we
Tightly planned kitchen (facing page) overlooks a basement den below and courtyard outside. Replacement of bearing walls with a new steel structure creates a free-flowing entrance (above).

"faced," says architect Jay Hugo. "The rear wall provided significant lateral stability for the structure, and the engineers kept trying to steer us in another direction. After a lot of back and forth, we came up with something as a group to make it work."

It is remarkable when the design team and clients come to the end of a major undertaking like this and are still partners, still married, still friends. "The house is an absolute joy," says Sandy Kjerulf. "We have always enjoyed sharing our home and our art with our friends, and we can also use the house to support the things that are important to us."

One example: the Kjerulfs hosted a November reception for a visiting sculptor who will be the artist-in-residence next spring at the Children’s Museum of Richmond.

Heyn enthuses over the bedroom balcony, joking that he feels like the Duke of Lombardy Street when he steps out onto it. Now he loves the sculptural quality of the exposed steel, despite some trepidation about it at first.

Bond says that’s all to be expected in the course of designing a house that is a personal reflection of the client. "As an architect, you introduce clients to new things for which they may not have the references," he explains. "They have to make a leap of faith. This client was more willing than most to make that leap."

Ann Norvell Gray is a Richmond freelance writer.
Bay Keepers

At the waterfront headquarters of the Chesapeake Bay Foundation, informed environmental practices gave rise to an innovative solution by SmithGroup architects.

By Ed Gunts

The headquarters of the Chesapeake Bay Foundation is supported by slender concrete columns that make it appear from certain angles as if it's floating above ground. The design strategy — largely a pragmatic gesture that enables many of the organization's employees to park beneath their workplace — was adopted so less of the surrounding land had to be used for parking. But the hovering effect can also be seen as a metaphor for the entire building, which in every conceivable way touches lightly on the land — from the materials used in its construction to the amount of energy it consumes during its everyday use.

Such an architectural expression is fitting for an environmental advocacy and education organization that set out to embody its mission by constructing one of the Chesapeake Bay region's first "green" buildings — structures that are environmentally sound and ecologically sensitive. With a staff of about 80, the foundation succeeded in creating a home that sets a high standard for eco-friendly design. But one of the most impressive features about the $7.5 million headquarters, known as the Philip Merrill Environmental Center, is that it doesn't wear its greenness on its sleeve. There's nothing so esoteric about the building that other companies or institutions couldn't incorporate its ideas into their offices as well. That was the goal.
A common criticism of the “green design” movement in architecture is that, while it may produce buildings that are more energy efficient, they somehow differ from the norm — and are not always pleasing to behold. One of the greatest achievements of the Merrill Center, on the other hand, is demonstrating that it’s possible to create a building that’s eco-friendly without being alien. It would be an uplifting workplace even if it had no overtly “green” features at all. That it embodies the latest principles of sustainable design just makes it even better. It’s all a matter of priorities, says foundation staff chief Chuck Foster. “Some people want marble floors and granite walls,” he adds. “Instead of spending money on finishes, we spent it on green components.”

The Merrill Center incorporates many features of green architecture, from flushless toilets to champagne-cork drawer pulls. Aggressive energy conservation and sustainable building strategies were applied to the building’s materials, systems, manufacturing, construction, and maintenance. The headquarters was dubbed the nation’s greenest office building after becoming the first to receive the highest rating for Leadership in Environmental Engineering and Design (LEED) from the U.S. Green Building Council in 2000. Last year, it was named one of the Top Ten Green Projects by the American Institute of Architects.

Set on the shore of the Chesapeake Bay near Annapolis, Md., the 32,000-square-foot Merrill Center represents a maturing of the green design movement. The start-to-finish integration of ecologically sound principles with other architectural features is largely a tribute to the building’s owners and the design team, headed by the Washington, D.C., office of SmithGroup and environmental consultant Janet Harrison of Annapolis.

Before the architects began work, they were taken on a tour of the bay and the buildings that watermen typically occupy — wood structures raised on stilts and built to withstand the elements. That simple aesthetic stuck with the designers, who decided it was equally appropriate for the demands of the Merrill Center. “Living on the
bay is tough," says Thomas Eichbaum, FAIA, principal-in-charge for SmithGroup. "The watermen's buildings are efficient, tight structures. That's what was right for this building, too."

Directors had made it amply clear that the foundation's mission is to protect the bay — and they believed strongly that the headquarters should reflect that mission. They wanted a structure that would not only house employees consolidated from four locations, but also serve as a setting for environmental education and volunteer training. The architects responded with a three-story structure that rises from the leftover foundation of the Bay Ridge Inn, which once occupied the site. As part of the process, the inn was carefully disassembled so that most of the debris could be recycled. Old concrete went to build new roadbeds, for example.

Those recycling efforts partially counter criticisms that the Merrill Center was built outside an urban center, where public transportation would have been available to most staffers who now drive to work — and consume more fuel. But directors wanted to locate near the Chesapeake Bay. They compensated by building on the inn's foundation, leaving 85 percent of the site undisturbed.

From a distance, the Merrill Center appears to be part farm building, part office. The more solid land side, which is sealed with metal and masonry walls, contrasts sharply with the water side, which opens to the sun and bay. The sloped roof catches rainwater and recycles it for use by the building's occupants.

Inside, the high-ceilinged work spaces are filled with natural light. The staff opted to work in an open plan layout, rather than private offices, because it's more energy efficient. Exposed wood and ductwork make the open spaces reminiscent of an old loft building that has been converted to office use.

The technology is state of the art for green design, including lights controlled by heat and motion sensors and signals that notify employees when outdoor temperature and humidity conditions permit opening the windows for natural ventilation. Other green touches include showers for employees who bike,
View from the lobby toward one of the main work areas shows how sunlight filters into the office building.

First Floor Plan

1. Entry Vestibule
2. Lobby
3. Workspace
4. Meeting Room
5. Shower/Changing
6. Terrace
7. Deck
8. Conference Center

Inform 2002: Number Three
Sustainable bamboo flooring dresses up the lobby; railings on the stair are made of recycled steel.
run, or kayak to work; a staff kitchen to cut down on out-of-office lunch trips; and a hybrid gas-electric vehicle for employee use.

Practically every material in the building was selected because it is environmentally correct, from the bamboo floor in the lobby to the cork tiles on other floor surfaces to ceiling tiles made of recycled paper. SmithGroup was primarily in charge of rounding up materials, such as wood from environmentally managed forests. The foundation did some of its own scavenging too, finding old pickle barrels that were fashioned into sun shades.

Officials figure the building cost $199 per square foot to construct, and the green elements accounted for approximately $46 per square foot. But the foundation expects to recoup much of that amount over time in the form of lower energy costs—an estimated savings of $50,000 per year over what it was spending before.

Two years after the building opened, it has exceeded all expectations in reducing energy usage. Before it opened, the new Merrill Center was expected to consume 51.2 percent less energy than a conventional office building the same size. It actually has consumed 52.5 percent less energy than a conventional building, according to monitoring by the National Renewable Energy Laboratory, part of the U.S. Department of Energy.

SmithGroup's Greg Mella, AIA, says the client originally expected to rely on natural ventilation 9 to 10 percent of the time, but the reality has been more than 33 percent. In addition, planners expected that the staff would use 1,200 gallons of water a day, but largely because of flushless toilets used in the building the consumption has been just 90 gallons per day—60 gallons of which is stored rainwater. The solar heating system has been so effective that the building has never run out of hot water, even in winter.

Asked if the foundation would have done anything differently, Foundation Vice President Mary Tod Winchester said the engineers may have been overly cautious when designing the mechanical systems—possibly resulting in oversized pumps and ducts. If the foundation had known that prior to construction, it might have invested less in heating, ventilation, and air conditioning. "When you're a pioneer, you don't know," Winchester says.

The Chesapeake Bay Foundation also didn't anticipate the high number of requests it would receive for tours and information about the Merrill Center. Tour demand alone has been so strong that fixed times for tours have been established. "People can come here and see everything we do all around the bay—restoring wetlands, oyster gardening, community activism," Winchester explains. "It's a wonderful beginning to get people to understand what we're trying to do."

One of the most encouraging developments is that the foundation is discovering new ways to reduce energy usage the longer it operates the building. As a result of the fine-tuning, less energy was required to cool the building during the summer of 2002 than during the summer of 2001, even though average temperatures were higher the second summer.

Emerging technologies will be tested here, too. The goal is to create a building that shows what can be accomplished by anyone, Winchester said, rather than create a one-of-a-kind structure that is so specialized no one can emulate it. "We're setting an example. The idea is to get people to do what we're doing, because that is what is going to make the difference."

Ed Guns is the architecture critic of The Baltimore Sun.

Project: Philip Merrill Environmental Center, Annapolis, Md.
Architect/Engineer: SmithGroup, Washington, D.C. (Thomas Eichbaum, FAIA, principal in charge; Robert M. Anderson, AIA, project manager; Donna McIntire, AIA, project manager/project architect; Greg Mella, AIA, project architect; Cheryl Brown, interior design; Don Posson, PE, lead mechanical/plumbing engineer; Cindy Cogil, PE, mechanical engineer; Raymond E. Doyle, PE, mechanical engineer; Donald Keith, plumbing engineer; Brian D. Charles, electrical designer)
Project Manager: Synthesis, Inc.
Consultants: Shemro Engineering, Inc. (structural); Greenman-Pedersen, Inc. (civil); Karen Motivans (environmental, site master planning/restoration, landscape design); J. Harrison, Architect (LEED documentation and consultant)
Contractor: Clark Construction Group
Client: Chesapeake Bay Foundation
When a prominent Norfolk couple decided the time had come to leave the city behind, their search for an architect to create their new house was biased by a strong interest in design excellence. The additional goal of creating a sustainable, environmentally responsible house emerged only once they had selected an architect whose professional interest is to combine design consciousness with a mission to build with global ecology in mind.

That choice: William McDonough + Partners of Charlottesville, a firm that is at the forefront of green design worldwide. Principal William A. McDonough, FAIA, drove to Tidewater to meet with the couple (who will remain anonymous) and survey the untouched Virginia Beach site they had chosen for their new home. Although most of the neighboring houses along the bayfront were planted close to the water in order for their occupants to see and be seen, McDonough's team proposed a more responsible approach. Why not keep the new house set back from the shoreline and allow the natural landscape to survive — perhaps even thrive? So the decision was made to place the new house 100 feet distant from the land's edge, augmenting the existing wetlands and helping absorb pollutants that run off the house.

Working with Charlottesville landscape architect Warren Byrd, the design team developed a scheme for the site that relies on native plants. The planting plan emphasized the use of diverse species to enhance the site, which already included pines, black locusts, and white, red, and live oaks. "It was predominantly a field surrounded by woods when we started," says Allison Ewing, AIA, the project architect. "We did much more planting than we did clearing of the site."

The characteristics of the landscape did much to influence the house's design, which was organized to afford a string of views — "like pearls of a necklace," Ewing suggests. The imagery of the house also drew its inspiration from the nearby context of docks stepping out into the water. The billowing roof forms of the main wings and the concrete piers of the space that connects them are strongly evocative of a waterfront setting.
The two main wings of the house are connected by a low pavilion that has a rooftop garden (left).

Rainwater from the main house (in background) flows through a series of channels and into a freshwater detention pond. The pond nestles against a stone deck that wraps around the pool house and two swimming pools.

Three easily identifiable masses divide the house into zones that are private, public, and somewhere in-between. Visitors park in a gravel drive and enter through a wide glass door. Inside is the public wing, scaled for entertaining yet rich in its variety of spaces, which range from the cozy library that can be secured behind heavy curtains to the soaring living room complemented by a pivoting Dale Chihuly chandelier.

At the opposite end of the house is another two-story volume that houses the master bedroom suite and bedrooms for the couple's four children. Family members enter here from the garage or driveway. The first floor includes spacious quarters for the adults, including a luxurious tiled bathroom with shower and spa, and a media room where everyone gathers to watch movies. The kids' domain is the second floor, which includes a commons area and screened porch. Each child has a private bedroom with its own bathroom and a light-filled loft space above.

Separating the two taller wings is a glass-enclosed central pavilion. This is the center of family life and the place for informal entertaining, with a spacious kitchen, open family room, and

Sustainable features of the house include Spanish cedar siding and control of runoff.
The living room (left) boasts a curved ceiling of tongue-and-groove cherry. Clerestory windows fill the single-story pavilion with natural light (right).

A large screened porch facing the wooded back yard. On top of the concrete-framed pavilion is a sod-covered roof terrace with a trail of pavers snaking through grasses and ground cover. “Bill McDonough likes to think of roofs as energy-producers or as habitat, producing oxygen,” explains Ewing. “The sod roof absorbs rainwater and slowly releases it back into the atmosphere – much like a tree.”

Materials found in the house were selected for their environmental attributes. Sustainably harvested woods, for example, appear throughout, both for framing that is concealed and for finish materials such as flooring, cabinetry, and trim. Exterior siding is Spanish cedar; interior floors are sustainably harvested cherry.

Ewing also notes that the roofs on the two tall wings are canted southward, anticipating the integration of photovoltaic panels that can generate electricity from sunlight. Those panels were deemed to be too expensive at the moment, but the architects believe photovoltaics will someday become more common and more affordable. “It’s what we call anticipatory design science, anticipating improvements in current technology,” she says.

The residence also puts its site to good use. Heating and cooling systems are coupled with geothermal wells that use the earth’s temperature to keep the house comfortable. Water is celebrated as part of the design, too. Rainwater flows off the roof and runs down a series of channels into a freshwater detention pond, which has a thriving community of fish and plant life. Some of the pond water is absorbed into the ground; much of it evaporates. Either way, it is kept out of the Chesapeake Bay watershed.

The selection of contractor Jim Sykes was another critical factor in building green,” explains Ewing. “One of the main issues in building this way is construction waste management and securing certification for the sustainably harvested woods. The contractor needs to provide documentation that the materials he uses have been certified. He did that very well, and produced a high level of craft.”
The interior provides intimate seating areas, while including benches made of reclaimed applewood for large social gatherings.

All of those concerns spring from the architect's philosophy about blending good design and quality construction with a responsible attitude toward the environment. "We think about sustainability as a quality issue — that buildings should be both beautiful and responsible," Ewing asserts. And, in this case, that goal was met admirably.

Project: Virginia Beach Residence  
Architect: William McDonough + Partners, Charlottesville (William A. McDonough, FAIA, principal-in-charge; Allison Ewing, AIA, project architect; Chris Hays, AIA, John Easter, Jim Duxbury, Roger Birle, AIA, project team)  
Consultants: Susan Nelson-Warren Byrd Landscape Architects (landscape architecture); Studio Sofield (interiors); LeMar Terry and Neil Chassman, Inc. (lighting design); Sinclair Pratt Cameron (structural)  
Contractor: James M. Sykes Construction Co., Inc.  
Client: Name withheld at owner's request
The commission to design new offices for Environmental Defense, a nationally recognized environmental organization based in Washington, D.C., brought with it a strict set of guidelines aimed at creating a setting that is a model for the values the organization so resolutely defends. Working in collaboration with a building committee of about a dozen people kept architect Ken Wilson, AIA, on his toes. "They are outspoken people — each of them is an environmentalist, and a number of them are attorneys," says Wilson, a principal of Envision Design in Washington, D.C.

The desire to upgrade the existing space was a given, but the committee also insisted the offices be filled with natural light, comprise a healthy workplace, have minimal impact on the environment, and keep to a reasonable budget. They were also interested in taking a proactive stance in having the project certified with an exemplary LEED rating, a designation for Leadership in Energy and Environmental Design given by the U.S. Green Building Council. The design team's challenge included the severe limitations of the building: a floor plan with unusually long and narrow proportions and an 8-foot-6 ceiling height from slab to slab.

Environmental Defense mandated that every workstation have access to natural light and that each worker enjoy a view to the outside from a seated position — goals that were difficult to accomplish given the client's interest in providing private offices for about two-thirds of the employees. "That's just the culture of their organization," Wilson allows. To accomplish the goal, the designers gave each perimeter office a large glass panel along the corridor, allowing light to penetrate into the office space. Interior offices, furnished with workstations equipped with low side panels that are easy to see over, have glass walls facing the perimeter.

Every material incorporated into the project was scrutinized for its environmental qualities, as well as its ability to satisfy functional and aesthetic demands. Most of the selected materials are high in recycled content, including: gypsum board (100 percent), rubber flooring (100 percent), seating fabric (100 percent), and ceiling panels (75 percent). Paints with zero VOC (volatile organic compound) ratings and carpet adhesives with very low VOC were used throughout the office. Open workstations, desks, and conference tables were custom designed from eco-friendly materials, including certified sustainably-harvested wood, wheatboard, and biocomposite board. Break room
tables are made of wood resin material that can be recycled back into itself. Two-thirds of the office seating was salvaged or reused, and all file cabinets were salvaged or bought used.

It's notable that the Environmental Defense offices were accepted recently as a pilot project in the development of LEED standards for commercial interiors, says Wilson, who sits on the committee of the U.S. Green Building Council working to develop such standards. Other committees are writing standards that would apply to existing buildings, core/shell buildings, residential projects, and retail stores. "The whole point is to test the rating system," Wilson explains. "In this case, it's a way to see if the current rating system realistically applies to commercial interiors." If those ratings do apply, don't be surprised to hear more about this project as a trendsetter in eco-design.

Glass sidelights at interior offices allow outside views beyond workstations.

Custom reception desk is made from certified cherry veneer on agriboard core. The work surface is sunflower husk biocomposite material.
Beth Reader, AIA, did not set out to create everyman’s sustainable home. But she and her colleagues at Reader & Swartz Architects did come close to accomplishing just that in the low-tech, common-sense house they designed for a retired couple in Rappahannock County.

Clients Russ and Polly Scoville professed their long-standing interest in environmental issues and sustainability, as well as the aesthetic of reclaimed timbers. With Reader’s guidance, they obtained timbers that once functioned as bumpers on the St. Lawrence Seaway from Blue Ridge Timberwrights in Christiansburg. These recycled timbers now create a massive sculptural frame – the most prominent interior feature. Plumbing and utility areas are located outside of the frame, leaving the hand-worked timbers unencumbered.

Though the reclaimed timbers were costly, attention to the cost of other elements kept the project within budget. For example, oriented strand board sheathing on the inner surface of the roof and wall panels was painted and left exposed, emphasizing texture while controlling costs.

Energy conservation strategies focused on cooling and heating systems, the largest energy draw in modern homes. Reader, a principal of the Winchester architectural firm, found ways to harness natural phenomena, as well as retain heat and cool air, using innovative materials. Prefabricated structural insulated panels, made of styrofoam sandwiched between slabs of oriented strand board, were attached to the frame to create the roof and exterior walls. With a high insulating value of R-22, the panels minimize heating and cooling costs. Using a woodstove as the primary heat source, the home is kept comfortable in the winter for about $40 per month.

Passive solar elements add to the house’s efficiency. Built into the side of a slope, the house has a southern exposure with a three-story bank of large windows that bring in winter sunlight. A carefully angled overhang screens the summer sun from the interior. On the northern side, which exposes only two floors to the elements, smaller windows control heat loss. The house’s precisely placed windows create a natural convection current that circulates warm air up and out of third-story windows in the summer.
With all its green components, this house still looks and functions like a home. Reader tailored the floor plan to suit the clients' retiree lifestyle. The first floor functions as a single unit, with bedroom, bath, kitchen, living, and dining areas all designed with accessibility in mind. The upstairs and basement can both become guest suites. The 2,785-square-foot house looks and feels bigger than it is, thanks to the openness of the floor plan and the added volume of the screened porch.

In the final analysis, this house is not striking because of cutting-edge technology or groundbreaking design. Instead it strikes a comfortable balance between sustainable technology and client-driven amenities. What could be more responsible?

The interior is dominated by the recycled timber frame (right). To highlight the wood, two-by-fours are placed behind the members, creating a subtle reveal (above).
Architect: BCWH Architects, Forest and Richmond
Project: Holy Cross Regional Catholic School

Phase one of the master plan for Holy Cross School involves extensive renovation and additions to the existing facility. The project will create a new entry, new chapel, and an expanded student commons, as well as new parking and landscaping. Tel: 434-385-0495 (Forest); 804-788-4774 (Richmond)

Architect: Mitchell/Matthews Architects and Urban Planners, Charlottesville
Project: West Dell House, Sweet Briar College

West Dell House, a 3-level student residence located on the Sweet Briar campus in Amherst County, will house 32 students. The building and gardens strengthen the pedestrian aspect of the street while responding to the architectural heritage of the Ralph Adams Cram-designed campus. Tel: 434-979-7350

Architect: Wiley & Wilson, Lynchburg
Project: Madison County E-911 and Sheriff’s Office

Madison County and Wiley & Wilson Architects have teamed to convert and restore a mid-1900s Madison Firehouse into the county’s new state-of-the-art E-911 Center and Sheriff’s Office. Conceptual elevation prepared by Andy Mank. Tel: 434-947-1901 / info@wileywilson.com

Architect: SMBW Architects, PC, Richmond
Project: National Memorial for Organ and Tissue Donors

The Richmond HQ for the United Network for Organ Sharing will be the home of a 10,000 s.f. national memorial for organ and tissue donors. Conceived as a garden intervention, the memorial’s three rooms symbolize the emotional journey of a donor family facing this decision. Tel: 804-782-2115
Architect: Bartzen & Ball, PLLC, Richmond
Project: New Terry Hall Dormitory, Woodberry Forest School
This 12,500 s.f., 30-student dormitory at the Woodberry Forest School near Orange will be constructed from a concrete structural frame clad with Flemish bond brick, traditional detailing, and slate roofing. The design is informed by the Georgian character of the campus. Tel: 804-344-4405

Architect: Hayes, Seay, Mattern and Mattern, Inc. (HSMM), Roanoke
Project: Rescue Mission of Roanoke – Women and Children’s Center
The 40,000 s.f. Women and Children’s Center at the Roanoke Rescue Mission will provide a drug and alcohol recovery program for women in residence with children. The facility will extend the mission’s campus, blending into the historic residential neighborhood nearby. Tel: 540-857-3257

Architect: Clark Nexsen Architecture & Engineering, Norfolk
Project: Executive Alumni Center, Mary Washington College
This project renovates the 5,500 s.f. Trench Hill House, and adds 18,000 s.f. of new construction, including the Office of Alumni Relations and College Advancement, with 46 offices, the new Trench Hill Guesthouse, and the Reception and Conference Facility. Tel: 757-455-5800

Architect: Baskervill & Son, Richmond
Project: First Market Bank branch prototype
First Market Bank’s branch prototype design was developed to support its vision of retail banking and to supplement its in-store banking program. The building interior is a unique departure from stereotypical bank environments. Tel: 804-343-1010
On the Boards

Architect: OMJMH+N, Arlington
Project: Baltimore County Detention Center Expansion

This 285,000 s.f. addition to a Towson, Md., detention facility will provide dormitories, individual housing units, and spaces for recreation and support programs. A curtain wall system utilizing clear, green, and sandblasted glass will form the façade of the 3-story administration building. Tel: 703-807-2500

Architect: Gresham Smith & Partners, Richmond
Project: Shanghai Central Area High-Rise Building Design Concept 2

This 810,000 s.f., 45-story, mixed-use building will contain office space, retail, residential, and a private club/winter garden on the top floors. The building is to be located in the Zui Financial Center in Pu Dong, Shanghai, in The People's Republic of China. Tel: 804-270-0710

Architect: CMSS Architects, PC, Virginia Beach
Project: U.S. Department of State Embassy Project

Located in Yerevan, Armenia, this new Embassy Compound provides 168,000 s.f. of office, warehouse, and residential facilities on a lakefront site. Extensive security requirements were integrated into this project. Tel: 757-222-2010

Architect: Smith + McClane Architects, Richmond
Project: Thomas Residence

This 1,600 s.f. addition to a farm house in King William County includes a master bedroom suite on the upper floor and a new kitchen and family room on the first floor. Also part of the project is a renovated breakfast room and 600 s.f. of porches, both screened and open. Tel: 804-648-8533

On the Boards listings are placed by the firms. For rate information, call Inform at 804-644-3041.
Converting a 1950s warehouse into a comfortable, stylish office is no small feat. But Skip Maginniss, AIA, of BMK, P.C. in Alexandria, saw an opportunity to explore the raw potential of the existing structure and transform it. "We were lucky to have a client interested in preserving the character of the building and expressing it in the overall design," says Maginniss, praising the vision of McKinley Marketing Agency, which now occupies the building.

The first obstacles the architects faced were the lack of windows on the ground floor and the unsightly loading dock—a feature no longer suited to the building's use. Maginniss started by punching new openings for windows in the original recessed brick panels. In place of the loading area's overhead door he inserted operable doors that flood the largest corner office with light and lead to a small curved balcony. Augmented by a reorganized drive and subtle landscaping, the new façade's scale and texture fit better with the surrounding residential neighborhood.

Interior renovations were executed in a bolder fashion, particularly on the first floor, where clients are greeted. The color-washed mountain range "wall" that wraps over the original concrete block walls is not strictly a visual device; the wall also contains insulation and wiring systems. The partially visible concrete block and overhead ductwork expose the original warehouse shell, articulating the difference between the old and the new.

The roof terrace adds a soothing change of pace from the frenetic office. Now employees can ascend the extended stair into a lush roof garden with a striking view of the Potomac River—not a bad way to convert a former warehouse into a suitable workplace.

— Rebecca E. Ivey