Greening Goes Gold at Warren Wilson College

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The Warren Wilson Admission/College Relations Center, nearing completion, will be one of the first buildings on a college or university campus to rate the Gold LEED certification for new construction. Nationwide, fewer than 60 newly constructed buildings of any type have achieved the Gold LEED designation.

LEED (Leadership in Energy and Environmental Design) is the rating system developed by the U.S. Green Building Council. To achieve a Gold LEED certification, buildings must meet 39 of 51 standards under the categories of site sustainability, water efficiency, energy and atmosphere, materials and resources, indoor environmental quality, and innovation.

The Arts and Crafts-style building, using stone from nearby mountains and wood siding and trim from the college forests, is a blend of what architect Steve Farrell calls “the poetic with the practical.” Paul Braese, Director of the college’s Facilities Management and Technical Services, praised LEED for that practicality. “Efficiency has more to do with operations than with conserving,” he said, “which leans heavily on human behavior. Conservation won’t do well in the real world if people won’t buy it. LEED has helped by instituting standards and systems that set comfort alongside sustainability. We have built a structure that is beautiful, livable, and will use 50 percent less energy than a conventional building of the same size.”

Although the recent history of green building at Warren Wilson includes its flagship EcoDorm, completed in 2003, the Admission/College Relations Center is the first “in-house” project. In June 2004 the college received its unlimited commercial contractor’s license, allowing FMTS to oversee the design and to manage and perform the construction.

For Warren Wilson College, where work shares the program triad with academics and service, this new construction was the ultimate in on-the-job learning. Biagio Scibetta, a recent WWC graduate and project coordinator, said, “Student crews worked extensively on this project, and there’s very little that they did not do. Crews included Building Services, Purchasing, Natural Resources, Campus Support, Carpentry, Electric, Plumbing, HVAC, Paint, Autoshop, Locksmith, Housekeeping. And these were just FMTS crews. There were also crews from Forestry, Recycling, and Landscaping who played important roles.”

Part of the mandate of sustainability is economic. Paul Braese hopes the Admission/College Relations Center will model the marriage of green-building and fiscal responsibility. He said, “The Green Building Council has gathered together people who are becoming the gears of the system, the ones saying ‘We can do this—this isn’t more expensive; it’s smart.’ The movement is growing exponentially. I see it when the state of North Carolina has its first energy conference ever, for sharing information and measuring the performance of institutions. I see it when individuals, contractors, managers seek LEED certification. People are seeing connections, possibilities. continued on page 2
moves through mechanical systems to heat or cool the building as needed and creates a cost-cutting heat pump. Energy efficiency, in addition to the building envelope mentioned above, include the forced-air geothermal fixtures by 30 percent, by using dual flush toilets and low-flow, motion-activated bathroom faucets.

The Windows – casement, double-paned, and low-e are also used in the lower level exterior offices. This prevents dust and dirt from collecting inside. This quality (IAQ) during construction by covering duct openings to allow light to penetrate campus. Both the upper and lower levels use antique, recycled doors with glass panes that allow light to penetrate walls. Insulation strips were installed over all exterior walls to create a thermal break between the studs and the ground-source heat pump that allow the building to operate with half the energy of a conventional structure of the same size. "California Corners" were installed in the exterior wall corners to accommodate insulation. Tee posts were installed for low air-infiltration – are also larger to allow more natural daylight for low air-infiltration – are also larger to allow more natural daylight.

Native landscaping was also installed in the lower level exterior offices. The site is reused to prevent dust and dirt from collecting inside. This quality (IAQ) during construction by covering duct openings to allow light to penetrate campus. Both the upper and lower levels use antique, recycled doors with glass panes that allow light to penetrate walls. Insulation strips were installed over all exterior walls to create a thermal break between the studs and the ground-source heat pump that allow the building to operate with half the energy of a conventional structure of the same size. "California Corners" were installed in the exterior wall corners to accommodate insulation. Tee posts were installed for low air-infiltration – are also larger to allow more natural daylight for low air-infiltration – are also larger to allow more natural daylight.

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Asheville faces critical stress upon its air quality exasperated by the reliance on the automobile as the only mode of transportation. We must address this in a multi-modal response:

- WNC ALLIANCE:
  - Require green building (LEED Silver) standards for all new city/public buildings
  - Establish support at the Planning and Building Department to provide Green building, education and consulting for city staff, and public and private projects.

- SOUTH FACE ENERGY INSTITUTE:
  - Retrofit existing city facilities to be models of energy efficiency
  - Analyze development code for barriers to and Building Department to provide Green building, education and consulting for city staff, and public and private projects.

- SOUTHERN ALLIANCE FOR CLEAN ENERGY:
  - Asheville can become the model of sustainability for WNC by adopting policies and programs that will nurture the environment, stimulate the local economy and support the quality of life for all of the community.
  - The city can create a green building program modeled on successful ones other local governments are implementing throughout the US.

- CAROLINA RECYCLING ASSOCIATION:
  - Rather than considering them separately from the planning, growth and development, the city needs to continue moving forward.

- NC SOLAR CENTER:
  - The Transportation Commission has given me the opportunity to work toward using cleaner fuels in our transportation fleet.

Effective solutions cannot be found outside the existing systems in Asheville. If all of these goals are met, we will be able to preserve the environment and the character of Asheville into the future. The key to making it work is embracing these goals as the cornerstone of every decision we make.

The U.S. Environmental Protection Agency's new Green Building Initiative (GBI) defines a Green Building as a product or process that minimizes or eliminates damage to the environment, utilizing sustainable, renewable materials and energy, and improving the quality of life for the residents of the built environment. The GBI recommends the following practices:

- Waste reduction:
  - Using recycled materials such as carpet tiles and hardwood flooring.
  - Salvaging wood from local trees felled by a cyclical pine bark beetle infestation.

- Use of locally harvested materials:
  - Incorporating wood and wainscoting from local college forests.

- Use of rapidly renewable materials:
  - Utilizing wheat, a rapidly renewable resource (harvested within 10 years) and cost-effective, for level desks and other furniture either reused or purchased from vendors specializing in refurbishing used furniture.

- Use of locally harvested wood:
  - Incorporating Douglas Fir, a locally harvested wood, that can be cut from local and regional sources.

- Use of highly efficient equipment and systems:
  - Monitoring equipment reveals how well energy systems are working and can help identify opportunities for improvement.

- Water conservation:
  - Designing systems to use less water and capturing stormwater for on-site use.

- Indoor environmental quality:
  - Incorporating formaldehyde-free materials and strategies for improving indoor air quality.

- Site sustainability:
  - Incorporating strategies to protect and enhance the local environment.

The GBI is an environmentally responsible program that can be applied to a wide range of products and processes, from new buildings to existing buildings, and from new products to existing products. The program is designed to help people make better decisions about the environmental impact of their products and processes, and to provide a framework for evaluating and comparing the environmental performance of different products and processes.
In these three words like the keys to a sustainable future for Asheville. Balance quickly comes to the forefront of any discussion about sustainable development. When we talk about balance, we are referring to the need to find a harmonious relationship between our personal needs and our City’s needs, our growth and our environment, our development and our community. This is not an easy task, but it is essential if we want to create a sustainable future for Asheville.

**Engaged mayors: another option for home**

Engaged mayors play an important role in promoting sustainable development in their communities. They are a crucial link between the local government and the citizens they serve. By engaging with the community and promoting sustainable practices, mayors can help to ensure that the city is on the right path towards sustainability.

**Letter from the President**

Greetings from the council, we hope you enjoy this edition of the newsletter! Your Green Building Council is proud to announce that we have made significant progress in the past year. We have been working hard to promote sustainable construction and encourage our community to adopt green building practices. In this issue, we will be highlighting some of our recent accomplishments.

**Asheville City Council- continued from page 3**

As BNCGBC members know, the Asheville area has been “discovered.” As more people choose to live in the area, development pressures are increasing. More and more, residential growth is occurring on our hillsides and within the city in order to reduce city employees having to drive further and further each day in order to find affordable places to live. And we must protect and encourage the city wide green space via private and public projects designed to reduce the impact of density and simultaneously support quality of life.

Carl Mumpower

**P.S.** We still have wonderful volunteer opportunities. If interested in volunteering some time to your organization, please contact us at BNCGBC.

**Marcus Renner**
Marcus Renner works with Appropriate Building Solutions, Inc a sustainable construction company in Western NC. He also teaches at www.new-technologies.org/ECT/Civil/autoclaved.htm.

Helpful Websites you to visit our website:

- We encourage you to support renewable energy by purchasing NCGreen Power. Sign up Today!

3. You dislike replacing non-durable building materials in your house every few years.
2. You have stock in asthma treatment drug companies.

Top 10 Reasons NOT to build or own a green home:

1. You're basic living in a home and think energy is not going to get any more expensive.

- ICF systems are usually designed to provide more insulation and a stronger wall than a stick framed building. We should utilize these are a few of the most popular forms of engineered wall systems. Each has advantages and disadvantages and we were not as hard to make, often because the homeowners were clear about what they wanted and the cost was acceptable.

- AAC construction is fast and easy. Common carpentry tools can be used and the process is quickly learned. The type of interior and exterior finish can be used, but plaster and stucco are the most popular and easiest.

- Insulated concrete forms (ICF) construction uses foam blocks to create a form to pour concrete into. Unlike conventional concrete forms, ICFs are easy to shape around complex shapes and are customizable. Some ICFs are made with recycled materials such as mineralized wood chips and recycled EPS foam and cement.

- Insulated concrete form (ICF) construction allows for quick and easy installation, requiring less labor and time. ICFs would not have that drawback.

- Another engineered wall system that is gaining in popularity is a pre-cast concrete wall. Keep a lookout on the websites www.icfweb.com and www.sips.org to become a member of the WNC Green Building Council.

- Help do your part by signing up for NCGreen Power and supporting renewable energy. Sign up Today!
Continued on page 8

people. According to Alyx Perry of Southern Forests Network (www.SouthernSustainableForests.org) there are some eliminated. Tape should never be used on ductwork. It simply won't last. While you're at it, take the opportunity to ensure Mastic should be used to seal up the duct system. By sealing these duct connections with mastic, this leakage is starting in the attic and basement/crawlspace. When duct leakage is present, it either sucks air into your house from unconditioned spaces (i.e. attics…especially their money. Through the years, we have found that the average house "leaks" its entire volume of air space and creates an unhealthy environment.

People know they want a healthy environment, but they also intuitively know that it is not a good idea to waste things…especially their money. Through the years, we have found that the average house "leaks" its entire volume of air suction created by the unintentional holes in the building envelope is what introduces the not-so-fresh air into the living environment and the need for a house to breathe. It's important to define the difference between tight and leaky houses.

Leaky ductwork is often times more detrimental to the efficiency of a home than air leakage through the building envelope. When duct leakage is present, it either sucks air into your house from unconditioned spaces (i.e. attics, garages, places like crawlspaces, basements, attics, and attached garages). In the attic, seal around electrical boxes, duct registers, and exhaust fans that penetrate the upper-level ceiling. It is also a good idea to pull back the insulation that covers the top-plates of interior walls, air-seal the gaps along the edge of window frames, and caulk around door frames and electrical and plumbing penetrations. If you live in a home with a mechanical system that has duct leakage, sealing the connections with mastic or tape is a very simple fix. If you live in a house with a huge central vacuum, the best solution is to call your contractor and have them add a ductwork sealant to the connections. Regardless of which type of duct leakage you have, it's bad for your health and your wallet. We looked into buying FSC certified framing for the main floor walls, but could not get enough people to go in on the order to defray shipping costs enough to make it a good economic choice. The lumber itself was in the same price range as ICF. Ideally I would like to do the structural work required. The engineered products that save enough in labor to repay the extra material costs and use less wood, especially old growth, make the envelope tight but breathable and with no off gassing after installation. We chose dry blown in cellulose for the floor sub floor says it meets the highest formaldehyde standards and comes from sustainable wood.

First there was the envelope. I compared cost and time and energy efficiency of SIPS, Insulated Concrete Forms and cost have always played a role and green building adds to the complexities by considering, efficient design, the source of the materials used, the health impact of materials in a building and in their production, the protection and use of resources on the site and both energy efficiency and water efficiency. Building requires huge numbers of decisions. Green building adds more variables to those decisions. Usually there is a lot more you're getting, and you're able to pre-filter and pre-condition it. These models also pass moisture from one air stream to the other, assisting in humidity control and mold prevention.

How do I find drafts and what is the best way to fix them? There are a few basic things you can do to increase the efficiency of your home’s heating and cooling system. First, check your thermostat. Are you set at the correct temperature? Also, make sure all your doors and windows are closed tightly. If you have a leaky draft, you may be losing up to 15% of your energy.

Energy recovery ventilation is a system that recovers the heat and moisture from the outgoing air and transfers it to the incoming air. This can be very beneficial in the winter months when the outside is cold and in the summer months when the outside is hot. It’s also great if you live in an area where you have humidity control and mold prevention.

In the latest project that I am involved with we have chosen a mix of new and old technologies. In deciding what to do the most with the least amount of materials. They were strong, well insulated and cost less than the ICFs but still save you a lot of time and caulk.

The gray area of building green

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