



The Greener Side

WNC Green Building Council News

Events Review

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| <i>Efficient HVAC Systems</i> | 2-3 | The Green Building Directory Release Party was a great success with over 100 people rockin' out to local music, drinkin' local brew and talkin' green. Despite competing with LEAF festival and Mother's Day, we had a great turnout and a great time. We also welcomed a bunch of new members and got to reconnect with some old ones. Thanks to everyone who showed up and gave their support for the Council and to the Asheville Brewing Company and their staff for hosting us. |
| <i>Making It Green From the Start</i> | 3-5 | Green Building Tops the List for Citizen Priorities |
| <i>Pallet Flooring</i> | 5-6 | At the recent Asheville Public Forum on Growth and Development, green building was one of the top 3 priorities listed by all of the groups. The other two priorities were WNCGBC actively promotes. Thanks to everyone who attended and helped direct City Council in a positive direction. |
| <i>The Green Home Show</i> | 6-7 | Another great example of citizens trying to make a positive difference, 150 of WNC's finest showed up to voice their opinions and evidence at the public hearing in front of the Public Utilities Commission. Citizens voiced their opposition to the proposals by NC's major utility companies to build new nuclear and coal-fired power plants. As an alternative, the people at the meeting pointed to the incredible opportunities for increases in energy efficiency and renewable energy sources as ways to address the growing electricity needs of North Carolina. |
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Platinum Sponsors Corner



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South Chase Mortgage Corporation is a mortgage lending institution that prides itself in providing high quality financial services to the public. With South Chase Mortgage, you get an experienced partner dedicated to your financial success. We adhere to the highest ideals of ethical social, corporate and environmental responsibility. South Chase Mortgage is able to provide financing for all project types and sizes, from a small rehab to large mixed-use developments. For true residential and commercial construction lending expertise, give Asheville's own Green Lending Specialists a call today.

Healthy Built Homes Update

The number of homes certified as of 6/15/2006 is 24!

The number of homes in progress as of 6/15/2006 is 267!

Healthy Built Homes Program

The Healthy Built Homes program is growing by leaps and bounds. After our most recent orientation training filled up a week before the course, we were forced to offer a second training on July 18th. The 30 people who attended the training included builders, realtors, developers and designers. It was a very enthusiastic group that now has the skills to go out and build HBH homes for the many homebuyers that are asking for them. Please contact us if you or someone you know are interested in attending the July 18th orientation.

Green Homes For Sale

The WNCGBC's Green Homes and Land For Sale webpage is growing each week. We have added more green homes as well as land for sale. If you are interested in listing a home or land that includes conservation easements or other green requirements please contact us at info@wncgbc.org or 828-232-5080.

Efficient HVAC Component vs. Efficient HVAC Systems by Issac Savage

When you ask someone if they have an efficient HVAC system, you'll often hear a response that sounds something like "Oh yea...I've got a 19 SEER heat pump," or "We just replaced our old furnace with a 92% high-efficiency unit."

What if our 19 SEER system only performed like a 10 SEER, because the rest of the system was not taken into account during installation or replacement? Most of us immediately refer to the efficiency of the actual piece of mechanical equipment, not the entire system as a whole. According to thousands of tests completed on HVAC units across the country, the average HVAC system only *performs* at 50-60% of its rated efficiency!

"There are a variety of elements within an HVAC system that affect the overall efficiency of the system. If all of these elements are not in balance or "fine tuned," the system as a whole will never be able to achieve the laboratory-specified efficiency that's on the box (and your invoice). "

The efficiency of heat pumps is expressed in two parts. The cooling efficiency is expressed as "SEER," which stands for **S**easonal **E**nergy **E**fficiency **R**atio and is determined in a laboratory setting with the unit operating under a specific set of conditions. The heating efficiency is taken into account within the HSPF (**H**eating **S**eason **P**erformance **F**actor) rating. In our climate, the HSPF is actually more important than SEER, since we use more energy to heat rather than cool.

Both of these efficiency related numbers refer *only to the piece of mechanical equipment*. There are other components of an HVAC system that also affect the efficiency of the system. Think of it this way: You could buy a Toyota Prius that is rated to get 55mpg, but if you load it down with 5 people, poke a few holes in the gas tank, and never change the fuel filter, you'll be fortunate to get 15mpg.

There are a variety of elements within an HVAC system that affect the overall efficiency of the system. If all of these elements are not in balance or "fine tuned," the system as a whole will never be able to achieve the laboratory-specified efficiency that's on the box (and your invoice). Since I don't have room to discuss all of the components in detail, I'll focus on two that typically decrease the efficiency of the system the most: *ductwork and charge*.

The first thing to understand about an HVAC system is that every unit is designed to have a different amount of airflow across the coils (through the unit itself). The standard system requires approximately 400cfm (cubic feet per minute) per ton to flow across the coils. So, if you have a two-ton system, the manufacturer expects it to be installed to move ~800cfm across the coil. This means that the return should suck 800cfm from your house and the supplies should provide 800cfm back to your house.

Most systems have ductwork that is undersized (or looks like pretzels in your attic), which increases static pressure and therefore reduces the amount of air that the fan can pull across the coils. If the system mentioned above is only able to pull 600cfm from the house (due to undersized ductwork), then it is not performing at its rated efficiency. Low air flow not only decreases the efficiency of your system, but also creates comfort problems within the home.

Duct leakage also results in a large decrease in your system's overall efficiency. What would happen to the system's efficiency if it was pulling 30% of its return air from the attic, instead of the living space? Do you think it would cause the efficiency to go down? You bet! What if your supply ductwork was losing 25% of its air into the attic or crawlspace? What would this do to the efficiency of your system? This equates to having a hole in the gas tank of your Toyota Prius – not a good idea. Duct leakage also decreases IAQ considerably by pulling in air from unhealthy places.

The last element is the "charge" of the heat pump. The charge relates to the amount of refrigerant in the system. This fluid is the vehicle for transporting BTU's of heat from inside to outside, or vise-versa. If you have too much or too little, the efficiency of your system decreases (not to mention its lifespan).

If you decide to replace your ductwork, because you want to increase the amount of airflow across the coils (raises efficiency), and you also seal all of the holes in the ductwork (also raises efficiency), then you must have your unit's "charge" adjusted to work in conjunction with the increased air flow across the coils. All of these elements are tied together. Ignore one of them and your system's efficiency WILL go down.

Studies show that less than 2% of residential HVAC systems have been properly air-balanced, and the average residential HVAC system performs at 50-65% of its rated efficiency, due to the imbalance of airflow, excessive duct leakage, lack of insulation, and improper charge. This means that your brand new 19 SEER unit that is installed onto your old ductwork will most-likely be performing at a SEER rating of 9.5 – 12.5! This also means that there is always the opportunity to install it correctly the first time, so the system will operate in an efficient manner from day one.

Air balancing is a crucial part of proper HVAC design and installation. Most commercial buildings *require* third-party air balancing to ensure the systems operate as designed. A balanced system ensures a healthy, comfortable, efficient environment for your family or client.

Search for a contractor in your area that understands air-balancing, preferably with a certification (National Comfort Institute is one of the most trusted in the industry). They will be able to look at all of these elements with reference to each other and ensure that your HVAC systems actually perform efficiently *as systems*.

Making It Green From the Start by Roger Clapp



Two girls are among generations of campers who have hung out on the porch of the old dining hall. Keeping the sense of ageless tradition is a requirement, along with "going green".

Eagle's Nest operates both a summer camp and an academic semester school on a 180 acre wooded tract just a few minutes outside of Brevard, in Transylvania County. The Eagle's Nest staff and Board of Trustees have recently decided that to grow our programs we must revitalize our inner campus and redesign building that are central to both the camp and school. With this decision we are confronted with the challenge of "not just talking the talk of promoting the natural world but walking the walk".

How do we build a new multi-use dining hall and kitchen that is green and sustainable, yet meets the needs of sustaining tradition – over 80 years of camp life – and fits in as the focal point for our campus? How do we create a building that reflects Eagle's Nest's respect for nature and our ecological ethos?

Here is our story of "going green" which, in truth, is just starting. It is filled with more questions than answers.

Before the decision to build is finalized, before the fund raising starts, we know we need to have a vision about a roof, walls, floor – an entire building – that tells our young folks what we value, and what we hope they will value. The "right way" seems to be the guideline of the U.S. Green Building Council's (USGBC) Leadership in Energy and Environmental Design (LEED) Rating System.

By way of background, Eagle's Nest is a foundation that runs Eagle's Nest Camp for 158 boys and girls during the summer months and an academic semester school, The Outdoor Academy of the Southern Appalachians, for up to 35 10th grade students for both a fall and spring semester each year. Students take English and math, history and language (French or Spanish) in rigorous, accredited classes. Meanwhile they live in a small intentional community, chop fire wood, range through the forest to observe plants and critters for science, and write about Appalachian mountain traditions for English class. Hiking, camping, rock climbing, canoeing and the arts are part of the curriculum – throughout the summer and school year. Throughout their time at Eagle's Nest, each camper and student is challenged to glimpse the beauty and complexity of nature and to learn that we must live in and with nature in a sustainable fashion.

Making It Green From the Start by Roger Clapp (cont'd)

At the moment, we have two dining halls and two kitchens for the two programs – all showing signs of wear and that we must soon replace. As we make this transition we want to “go green” in our design and building.

Recently, Brevard architects Doug Harris and Reid Wood introduced the Eagle’s Nest planning committee to LEED certification. Harris distributed a LEED check list with a preliminary look at what Eagle’s Nest will strive to achieve in the five categories. He estimated that, with real dedication to green principles and good planning, we could earn about 46 points out of 69 possible points, good enough for gold level of certification. LEED levels range from basic certification, to silver, gold, and at the high end, platinum.

Some points are not achievable for Eagle’s Nest, such as credit for brown-field redevelopment. Fairly easy will be light pollution reduction, stormwater management, resource reuse, and daylight and views enhancement.

More challenging will be water use reduction of 20 to 30% and construction waste management. How do we get our local building suppliers and others to provide us with “certified” materials? Will they even know what we are talking about?

Right away, our planning committee considered incorporating native plants for landscaping, even leading to the possibility of a cottage industry for growing “natives” for community and watershed restoration projects. Perhaps we can assist in the Cherokee restoration efforts for native craft materials? (See www.rtc.org.) These opportunities are exciting and offer a world of possibility as we begin to research this endeavor.

The decision to “go green” is an exciting challenge to also renew our dedication to our local community. Therefore, the Eagle’s Nest Foundation would like to extend an invitation for members of WNC Green Builders Council to join us at our upcoming charrette (scoping meeting) to be held at 8:30 AM on July 11 at Eagle’s Nest Camp outside Brevard.

We have room for 2 or 3 individuals and we welcome folks who can bring experience with LEED certification to the table or who have a genuine intent to build a certified building in the near future.

If you are interested, please contact Roger Clapp, chair of the Core Site Planning Committee and Board member: rbc99@aol.com.



Four boys enjoy making bread in the Whole Foods Kitchen at Eagle’s Nest Camp.

Is it possible to include some green power? Perhaps we can have solar cells for recharging the lap tops that our students use – more as a token and an educational tool than a big kilowatt source.

Being mostly construction-ignorant Board members, we have no real concept of what a commitment to “low-emitting materials” or the “thermal comfort control” criteria might really entail for our project. We have much to learn.

We can earn extra points by using the building itself in our environmental education for both camp and academic students, and we want to build public awareness, starting with this article.

Our kitchen facility will require special attention. Not only is our “Whole Foods Kitchen” a bustling center for everyday meals and supplying provisions for camping adventures, it is also a key learning center for good nutrition, lessons in food ecology, and immersion in local food traditions. Combining all these functions with the fact that the kitchen is the epicenter of energy use – makes “going green” in the kitchen very

important. The shared experience of others in the WNCGBC who have built energy efficient institutional kitchens is most welcome.

Can we earn points by using Cherokee craftspeople to build traditional dry-stack stone masonry for part of the building? Using recycled barn wood would go a long way to give hominess to the dining hall and to honor the old timers who lived sustainably in their handcrafted homes and barns. Do WNGBC members know of old barns that need taking down and recycling? We would willingly stockpile donations of old barn wood.

Making It Green From the Start by Roger Clapp (cont'd)

So Eagle's Nest is just at the beginning – with so many choices to research and so many decisions to make. The next step is an upcoming charrette (scoping meeting) to set our green goals.

For years, we have taught children the importance of living with nature. Now the adult leaders must role model through our own decisions. We know that we will do even better with community input and involvement.

(Roger Clapp is on the Board of Trustees of Eagles Nest Foundation. He is also the executive director of the Watershed Association of the Tuckasee River in Jackson and Swain Counties. He is available via rbc99@aol.com. Also, you are invited to visit www.enf.org to learn more about Eagles Nest and the OA.)

Pallet Flooring



Perhaps the best way to create a sustainable future is to use products that already exist. Oaks Unlimited in Waynesville NC is doing just that by turning pallets that would be discarded in landfills into beautiful wood flooring. Oaks Unlimited produces kiln dried lumber for domestic and international wood based companies. They heat their dry kilns with a wood gasification system. This system reuses their waste wood and some from area companies to produce low pressure steam. Oaks Unlimited takes pride in running a small but clean and efficient company that provides long term employment in WNC.

Joe Pryor the owner of Oaks Unlimited read an article in a recycling newsletter and contacted Dave Lowles with the Land-Of-Sky Regional Council's Waste Production Partners to become involved in producing the pallet flooring. The pallet flooring project was developed through a public partnership with NC State's Department of Wood and Paper science and several Governmental agencies including the U.S. Forest Service, and the U.S. Environmental Protection Agency. Joe Pryor became involved with the project because the product is competitive and is good for the environment which is a win-win situation for his business.

Recently, David Lehlbach of PalletFlooring.com has teamed up with Oaks Unlimited to market and sell the flooring and provided the following overview about pallet flooring.

What is pallet flooring and what are the benefits?

It is an attractive, environmentally-conscious hardwood flooring product made from former shipping pallets. Pallet flooring is a very unique flooring solution with natural character and visual interest. The flooring can be composed of Red Oak and White Oak, with Ash, Maple, Cherry, and Walnut sprinkled in. All softwoods have been removed prior to processing.

The flooring meets the requirements of many Green Building Councils, as well as the LEED (Leadership in Energy and Environmental Design) 4.1 and 4.2 certification requirements for post-consumer recycled content.

Pallet flooring is highly durable and is made with tongue and groove technology making installation easy. It is available in 3/8" thick with varying widths and lengths unfinished or finished. Go to www.palletflooring.com for products specifications.

The flooring provides a great look to new and existing homes, commercial buildings, and offices and compliments many styles of decorating from rustic to contemporary.

How it is made?

First, the best boards are chosen from our pallet supplier. Then, the boards are de-nailed and sorted for size. Then, they are kiln-dried to remove all moisture. Once that process is complete, they are cut, holes are filled, and are then planed, smoothed, sanded, and finished. For easy distribution to your site, they are boxed.

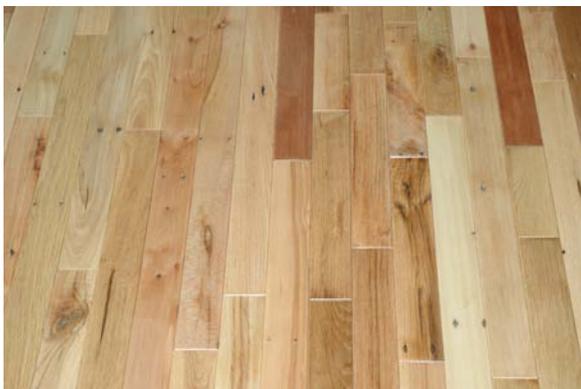
Pallet Flooring (cont'd)

How it is a "green" or renewable resource?

It recycles old pallets and stops wasting wood. David Lehlbach states, "It eliminates our need to destroy new timber - instead we were focused on a way to reuse existing wood and reduce landfill waste at the same time. It is a win-win on many fronts."

A press release from NC State University states that, "...that pallets also challenge the nation's overburdened landfills. An estimated 170 million of the rough platforms for merchandise, no longer needed after their contents are unloaded, become two percent of all municipal solid waste, and more than three percent of landfills construction and demolition waste. The problem is worst in the South, which buries 75 percent of the nation's wood waste." (http://www.ncsu.edu/news/press_releases/04_03/104.htm)

Trudi Glenn recently had 1200 sq feet of pallet flooring installed in her house. She chose the product because it was environmentally conscious and did not have to cut down any new trees. She also chose the flooring because of the character, local production, and the competitive pricing.



Builders are also pleased with the product. Seth Keliher of Southeast Ecological Design installed pallet flooring for another customer, and stated "*The product went down nice and smoothly, with minimal failure and cull out of materials*".

Although palletflooring.com is brand new to the market, it presents a very Green-friendly option in a marketplace with few environmentally-conscious solutions.

For more information about the product, please go to www.palletflooring.com, or contact David Lehlbach, Phone: 828-277-8302

Green Home Show by New Ryan Doyle

Where will you be August 25-27th this summer? If you're feeling alone, then you're not at the 2006 "Green Home Show", a new feature of the 6th Annual Southern Energy & Environment Expo. After five successful years and ever increasing interest in green building overall, the new "Green Home Show" will take a prominent place in this annual event.

Early sponsors, led by the WNC GBC include Home Energy Partners, New Life Journal, EcoLogical Home Ideas and several more in process are providing early support for more outreach and promotion to highlight the "Green Home Show".

The "Green Home Show" will reach out to a general public that is now realizing the benefits of sustainable building technologies, natural materials and energy efficiency. By including custom home designing, environmentally friendly practices and materials, energy efficiency for new and existing buildings, modern technologies and the latest information from tax incentives and ECO Certified realtors to the Healthy Built Home program, the public will have a one-stop opportunity to discover green building from the professionals.

Exhibiting business members of the WNC GBC will receive preferential booth locations and WNC GBC designation during the week end event and at the S.E.E. Expo website into 2007. WNC GBC Exhibitors will also have first option for presenting in the regular one hour programs offered each year, a proven way to educate the public while getting the word out about a business.

The "Green Home Show" is part of the expansion of the Southern Energy & Environment Expo, which in 2006 will offer, for the first time, food vendors in conjunction with "Sustainable Agriculture: Farming for the Future" at the new, additional Davis Exhibit Arena. "We simply needed more room after filling the McGough Arena in 2005", said Ned Doyle, S.E.E.



The Green Home Show (cont'd)

Expo coordinator, "And contracting for the additional Davis Arena not only gives us needed Exhibitor space, but allows us to finally offer quality food service, something we lacked in past years."

"The timing is also right," Doyle continued, "With high energy prices, environmental awareness and a weakening economy, the public now understands that investing in their homes is the best bet for them. It's not a matter of convincing the public that green building is a good idea anymore, it's a matter of showing them how to build green."

Coordinated promotion for the "Green Home Show" currently includes articles in the New Life Journal, participating business press announcements, grass roots networking and conventional publicity, in addition to regular S.E.E. Expo promotion efforts. Sponsorship and Exhibitor registrations are underway with the deadline for early registration July 21st, 2006. With nearly 7,000 participants over three days in 2005, the S.E.E. Expo is the largest sustainability event in the South.

For more information about the "Green Home Show" and the 6th Annual Southern Energy & Environment Expo or to register, please visit www.seeexpo.com or email to info@seeexpo.com.

Newsletter News Blurbs

JOHANN'S ANNOUNCES PROGRAM ENHANCEMENTS TO PROMOTE OWNERSHIP OF ENERGY-EFFICIENT NEW HOMES (Release No. 0191.06 Contact: Ed Loyd (202) 720-4623 Wayne Maloney (202) 690-0498)

WASHINGTON, June 6, 2006 - In support of National Homeownership Month in June, Agriculture Secretary Mike Johanns today announced special eligibility considerations for low- and moderate-income home loan applicants who are purchasing newer, energy-efficient homes.

"Homeownership has always been a central part of the American Dream," said Johanns at the Stand Up for Rural America Conference. "I'm pleased that through this new initiative we can encourage efforts to expand access to new, affordable housing opportunities in rural America, while emphasizing energy conservation."

Under the special program, called Home Energy Advantage, the qualifying ratios used to determine an applicant's ability to repay a home loan may be exceeded by up to two percentage points if an energy-efficient home is purchased.

Eligible applicants to Rural Development Section 502 homeownership loan program will receive increased flexibility in their loan eligibility determinations if they are purchasing a newer home that is energy efficient. In some cases, applicants may be able to afford a larger loan amount due to the qualifying flexibility because lower utility costs associated with newer homes equate to more income that can be applied to mortgage and other debt payment in a given month.

USDA Rural Development's Section 502 loan programs are available to qualified low- and moderate-income families to purchase modest homes in rural areas. Loans can be made for up to 100 percent of the appraised value of the property. The cost of installing energy-saving features in a home, such as insulation, storm windows and doors, as well as energy-efficient appliances may be included in the loan amount.

All new homes that are built to meet the 2000 International Energy Conservation Code (IECC) or a subsequent comparable code are considered energy efficient and eligible for the two percentage point increase in the qualifying ratios. Existing homes that meet the same standard, or are being retrofitted to meet it, are also eligible. The program is a nationwide pilot, and will operate for the next 18 months.

New homes that are built to IECC standards offer considerable energy efficiency and save homeowners money in their utility costs. After the mortgage payment, utility bills are usually the largest housing-related expense for homeowners each month. But an energy-efficient home, with such features as proper insulation, high efficiency heating and cooling systems, and energy-efficient windows, can lower utility bills significantly.

USDA Rural Development's mission is to deliver programs in a way that will support increasing economic opportunity and improve the quality of life of rural residents. As a venture capital entity, Rural Development has invested more than \$63 billion since the beginning of the Bush Administration to provide equity and technical assistance to finance and foster growth in homeownership, business development, and critical community and technology infrastructure.

WNC Green Building Council

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For membership application go to: www.wncgbc.org or contact: info@wncgbc.org



As a result, more than 1.1 million jobs have been created or saved through these investments. Further information on rural programs is available at a local USDA Rural Development office or by visiting USDA's web site at <http://www.rurdev.usda.gov>.

Green Building Survey Shows 20% Growth in 2005, 30% in 2006 GreenBiz.com

NEW YORK, May 3, 2006 - Preliminary results of a McGraw-Hill Construction/National Association of Home Builders (NAHB) survey indicated that there was a 20% increase in 2005 among those in the home building community who are focusing their attention on green, environmentally- responsible building, which is expected to increase by another 30% this year.

The research findings will be issued May 15 in the Residential Green Building edition of McGraw-Hill Construction's series of SmartMarket Reports.

After several years of slow but steady growth across the country, the green home building movement -- which applies innovative and environmentally sensitive construction techniques and products to reduce energy and water consumption and improve residential comfort and safety -- is rapidly moving into the mainstream. By 2010, residential green building is expected to grow to \$19 - \$38 billion.

"Green home building is at a tipping point among the builder population," said Harvey Bernstein, vice president of Industry Analytics and Alliances for McGraw-Hill Construction. "The data we recently collected indicates 2006 to 2007 is the time frame from which the builder population moves from a majority less involved to more involved with green building."

To serve the growing green building market, Bernstein also noted that McGraw-Hill Construction in May will publish its first issue of GreenSource, a new magazine dedicated to the growing market for environmentally-responsible green buildings. GreenSource, with content developed in collaboration with BuildingGreen, Inc., will present news, features, case studies of important projects, and green product information to more than 40,000 architects, interior designers, building owners, and members of the U.S. Green Building Council.

A new Web site dedicated to the green building industry has already been launched, at <http://www.greensource.construction.com>.

Earthaven Announces Natural Building Workshops

June 30 - July 4

ADOBE, COB & PLASTER

with Steve Brodmerkel & Chuck Marsh

Moving ahead on this year's focus project, we'll be learning how to shape and prepare earthen walls for plastering, and build an arched adobe interior hearth wall. If time permits, we will be "stair-stepping" the cob-adobe walls to interface with a strawbale wall. Carpentry will focus on building a wooden interior wall. \$255; returning students, \$225.

WORKSHOP IN STRAWBALE CONSTRUCTION

August 9 - 13

MIXED MEDIA EARTH & STRAW

with Steve Kemble, Mollie Curry & Steve Brodmerkel

Further progress includes raising the north strawbale wall and joining it to the cob-adobe walls. Other features, such as niches and arches, bas reliefs, and cob benches are on the agenda. Preparation of strawbales for plastering. A 4-day immersion! \$325; returning students \$290.

WORKSHOPS IN EARTHEN PLASTERS

September 1-4

INTERIOR/EXTERIOR PLASTERS & BAS RELIEFS

with Mollie Curry

Base coats, finish coats, niches, decorative work. Okay, not all of it is as glamorous as it sounds, but this is the core of the creative natural building experience. Carpentry may include installation of windows and doors. \$175; returning students, \$155.

September 29 - October 1

EARTHEN WALL EXTERIORS

with Mollie Curry

After shaping and prepping, and a base coat of plaster, exterior walls receive their creative blessing in a highly significant moment in Leela's development. Techniques for fine plaster application, tints, and embellishments. \$125; returning students, \$110.

Fees include all meals, materials, camping and facilities at Earthaven. Please contact Arjuna DeSilva at Arjunama@aol.com for more information.