

Green Roof Will Top Austin's Newest Starbucks

A Stratus Properties development scheduled to be completed in November 2005 in Circle C will have one of the first extensive, or vegetative, green roofs in Texas. A vegetated roof is typically constructed using a shallow growing medium that is planted with no- or very low-maintenance vegetation. The green roof will help mitigate the effects of the development on the environment by retaining and cleaning storm water runoff, lowering building energy use, and providing wildlife habitat.

Latte with a View

The 10,000 sq ft green roof will be visible from the mezzanine of the Starbucks coffee shop but will not be accessible to patrons of the development. The roof will be irrigated using two large rainwater collection cisterns. In addition, the Starbucks drive-thru roof will have a 7 kW photovoltaic array and a solar collector for water heating.

Gail Vittori, a sustainability consultant from the Austin-based [Center for Maximum Potential Building Systems](#), explains that the sustainability requirements for the project originate under Circle C's restrictive covenants. The restrictive covenants were part of the zoning and development agreement that Stratus reached with the City in 2002 for the 1,273 acres it owns on top of the [Edwards Aquifer](#). The green building restrictive covenants for the commercial development were based on [LEED™](#), but are site-specific due to the sensitive environmental nature of the sites, and far exceed LEED™ in some respects. According to Vittori, "The restrictive covenants and approach taken with this project provide an opportunity to raise the bar for development, especially in eco-sensitive areas, and is an example of how sustainable commercial building can be done throughout the region."

The covenants outline mandatory sustainability measures in seven categories:

- Sustainable Sites
- Landscape & Exterior Design/Heat Island
- Water Efficiency
- Energy & Atmosphere
- Materials & Resources
- Indoor Environmental Quality
- Innovation & Design Process

However, Laurie Swan, Stratus Properties Vice President, says, "The green roof, rainwater harvesting and solar panels are not required in the restrictive covenants. We elected to do those things." According to Swan, the green roof is expected to cost an additional \$150,000, and although the payback period exceeds 10 years, one benefit will be reduced utility costs for the tenants in this building.

Designing the Roof

The extensive roof uses the Weston Green Grid, a modular system (see photos below). Gail says she chose this type system for several reasons. The modular tubs offer the maximum amount of flexibility in use, design and layout. The system also decouples the roof membrane from the green roof system; for example, any of the tubs can be lifted completely off the roof, if necessary, without affecting the integrity of the roof.

The green roof was designed by Heather Venhaus, an Environmental Designer with the [LBJ Wildflower Center](#). The Wildflower Center has a longstanding relationship with Stratus and since the Center had recently begun a green roofs study, it seemed like a logical partnership. The Wildflower Center benefits by having more data for its programs and Stratus benefits from the Wildflower Center's expertise.

The roof was an unusual design challenge because of its long, narrow shape - basically a rectangle over 160 feet long and 60 feet wide that would be viewed from the short edge. Venhaus ran several perspective exercises and found that at about 95 feet, plants have to be over five feet tall to be seen. Since the modular tubs only hold about 8 inches of growing substrate, a five-foot plant is out of the question. Venhaus decided to use a combination of texture, color, and movement to hold the viewer's interest. Her design mimics the flow of a river, and uses several Mexican grasses with balanced evergreen and annual color to draw the eye down the roof, ending in a sea of native prairie grasses.

One note about the plants: of course the Wildflower Center chose native plants for the green roof. In Texas, the native plants have evolved in some pretty extreme conditions: poor soil, low water, little shade. However, the growing medium supplied by the manufacturer is designed to hold so much moisture that the plants are actually growing in much wetter conditions than they are adapted for. The growing media may actually be "too good" for some of our hardy, drought-resistant natives!

Building Code Basics

Did you know that batt insulation installed in a vertical position must be enclosed on all SIX sides to maintain the manufacturers' rated R-value?

For example, typical R-19 insulation installed in an attic knee wall (a wall with the interior finish on one side and open attic on other side) will lose approximately 50% of the R-value due to convection currents within the insulation. Therefore, what was installed as R-19 insulation will function as only R-9 or R-10.

To avoid the reduction of R-value, the attic side must be enclosed with an air barrier to effectively enclose all 6 sides of the stud wall space. The air barrier can be structural or nonstructural wall sheathing, gypsum board, polystyrene sheathing or house wrap material. No matter which material is selected, to be effective, the joints, seams, and penetrations must be sealed with approved caulks or mastics.

Dense pack insulations such as spray cellulose or spray foam will not have convection currents because of their structure, and will not require an attic side air barrier to maintain the rated R-value.



Knee wall with unenclosed batts as viewed from attic side. Not only is the insulation likely to fall out, loss of R-value is guaranteed. Air currents will be able to pass through the batts because they are not touching a solid surface on both sides.

Knee walls are often thought of as internal walls because they are under the roof and don't need protection from the weather.

It is not currently a code requirement that solid backing be installed on the attic side of a knee wall. Nevertheless, the

bottom line is that in order for batt insulation to insulate to its rated R-value it must be enclosed on all sides.

(Building Code Basics is a new addition to the newsletter, written by [Larry Brinkmeyer](#) - the GBP Code Guru)

John Umphress Joins the Green Building Staff



Welcome to John Umphress, the Green Building Program's newest Conservation Program Associate. John has been active in environmental and public policy for the past two decades. John recently served on one of

Leadership Austin's action teams and worked with the Real Estate Council of Austin to identify barriers to increasing the amount of affordable housing in the Austin area, and ways to surmount those barriers.

John is particularly interested in the advantages of building low-mass structures using panelized materials, while relying on passive heating and cooling techniques.

Married with two sons, John enjoys road and mountain biking, reading, cultivating orchids and coaching Little League.

John is part of our Residential Group and can be reached at 512-482-5303 or john.umphress@austinenergy.com.

Member Bulletin Board

FSC Certification Makes a Measurable Environmental Improvement

"[The Global Impact of SmartWood Certification](#)" (pdf file), a report released by SmartWood, an FSC ([Forest Stewardship Council](#))-accredited forestry certification program, describes the impacts that independent certification of sustainably managed timberland has on the environment. Quantifiable impacts of third party certification include better protection of: aquatic and riparian areas, sensitive and high conservation value areas, and threatened and endangered species areas. The report states that improvements were documented in worker safety, training, communication and conflict resolution, which has led to greater economic sustainability, more accountability, and better management planning, monitoring and chain-of-custody practices. There are several forestry certification programs, but many environmental groups, including the [World Wildlife Fund](#) and [Greenpeace](#), regard FSC certification as the most rigorous. It is also the most rapidly growing. Worldwide, FSC certified acreage has more than quadrupled over the last five years and now includes 133 million acres of forest. The global market for FSC certified wood is currently worth over \$5 billion and certified wood and paper products are now carried by many major retailers.

Speaking of FSC.... this is from the [FSC-US Newsletter](#).

Call for Building Projects

Have you worked on an interesting building project recently, either commercial or residential,

that made use of FSC-certified products? Please contact Katie Miller at 202-342-0414. FSC may feature your project in a newsletter article, or an online case study.

Affordable Comfort Calls for Conference Presenters

Affordable Comfort is still taking proposals for the conference to be held in Austin on May 22nd - 26th, 2005. Austin people and projects should be well represented at this conference. Read more about the [call for presenters](#) or [submit your proposal here](#).

Dynamic Reprographics Hosts "30 Reasons to Build Green"

In celebration of 30 years as printers for Austin's design communities, [Dynamic Reprographics](#) is hosting a FREE talk on the spirit of shelter at 1002 W. 12th Street on Thursday, September 22, from 5:30 pm - 7:00 pm. This presentation is a preface to Dynamic Reprographics 30 x 30 Sheltering Art Design competition, which will benefit Austin's homeless population. At the talk, local sustainable systems advocate Dick Pierce will show slides and host dialogue about:
Types of shelter - human, animal, physical, spiritual

Environmental building materials - natural, alternative, green, local, recycled

Structure styles - spanning times, places, cultures, climates, beliefs

Call for Entries and other information on upcoming events will be out soon. In the meantime, please see the [website](#) or call Kim Mason-Darnell at 512-474-8842 for more details.

Two States Require Public Buildings To Earn LEED Silver

Washington State made a law out of LEED™ this past April. Now Nevada has become the second state in the nation to require that all occupied, state-financed building projects use green building practices that earn them LEED™ Silver from the U.S. Green Building Council. The Nevada law, which was signed in June, also requires that Nevada universities and colleges offer education in the practices of green building that leads to LEED™ certification.

Austin Green Roofs Study Seeks Funds

The Green Roofs Study at the Lady Bird Johnson Wildflower Center began in May 2005 with a \$20,000 grant from [Roof Consultants Institute Foundation](#). This grant covered the completion of 24 test roofs with six green roof manufacturers providing their proprietary combination of green roof materials. Unfortunately, the original grant did not cover the purchase and installation of the data logging equipment and the EPA recently turned down the Wildflower Center's \$60,000 grant proposal. Steve Windhage, PhD, Director of Landscape Restoration Program at the [Lady Bird Johnson Wildflower Center](#) is seeking other funding to continue the study. The data logging equipment is needed to measure temperature (on and underneath the roofs), the amount and

rate of storm water run-off, and soil moisture content. On the bright side, Jeannine Tinsley, a Researcher in the Landscape Restoration Program, says the delay is giving her a chance to determine which plants are doing really well in the test roofs, and which need a little time to adjust to the growing media.

Green Building Loves GreenChoice!

The [Austin Energy September Energy Plus newsletter](#) recognized several business members who recently joined the GreenChoice Program. Imagine, your company's name on something that reaches nearly every Austin citizen! We noticed that some Green Building Program members were listed:

- [Black & Vernooy, Architects](#)
- [Emily Little Architects](#)
- [Solluna Builders, Inc.](#)
- [Studio Momentum](#)

Not signed up for GreenChoice yet? Click [Here!](#)

Austin's Plug-In Hybrid Campaign Begins

The City of Austin is part of a nationwide 50-City Plan aimed at building a market for plug-in hybrid cars. Austin, along with [49 other cities](#) plans to:

- Develop purchase incentives for plug-in vehicles.
- Secure fleet purchase commitments from local, state and federal government agencies.
- Solicit fleet purchase commitments from private companies.
- Promote individual citizen purchase commitments.
- Solicit local and legislative support of plug-in hybrid initiative through approval of favorable policies.

See the [Austin Energy website](#) for more information. Be sure to [sign the petition](#) asking automakers to produce plug-in hybrid vehicles.

High-Quality Digital Photographs Needed

We have an ongoing need for high-quality photos of rated projects (300 dpi in 8"x10" size) to use on our website and in PowerPoint presentations, exhibits, and advertisements. We would like exterior, interior, and detail shots. Photos should be well-composed, well lit, with debris and clutter removed. Pictures of projects with established landscapes are particularly needed. Please e-mail them to your [Green Building Program staff representative](#).