

## Seattle's New "Green Factor"

As awareness of the environmental impact of metropolitan areas grows, sustainability takes on a decidedly urban flavor. Regulators have responded with a variety of zoning code proposals for increased density, structured parking, pedestrian-friendly streetscapes and most recently, landscape requirements.

In comes the Seattle Green Factor! The mayor signed the new legislation, which is the first substantial revision and update of commercial zoning requirements in many years, in December 2006.

Green Factor is based on European approaches to urban sustainability, and offers landscape strategies that encourage sustainability and increase green space in the city. Previous requirements mandated a percentage of open space on a development site, but the result was not necessarily green or sustainable. The Seattle Green Factor now requires that a variable portion of a parcel be vegetated.

This variable is defined by selecting from a list of possible options, ranging from trees, shrubs and groundcovers of differing sizes and soil depths to green roofs and water features. Each option is assigned a specific point value. The values range from a factor of 0.2 to a factor of 0.7. Lower values correspond to lawn and groundcovers, small plants and small-to-medium trees, while higher values are associated with large trees and shrubs, green roofs, vegetated walls and water features.

The calculation uses a simple spreadsheet. The number of plants or the square footage is multiplied by its point factor. Increasing plants or square footage will accomplish the aggregate 0.3 green factor.

At first glance, this seems fairly easy to achieve. The landscape strategies suggested are not unusual; green roofs and vertical vegetated walls are becoming more common. The Green Factor is a menu of green elements that offer a developer flexibility. But when we applied the Green Factor to a current GGLO project permitted under previous open space requirements, it became apparent that achieving the Green Factor will do just what its authors hoped: change the way we approach urban landscape architecture.

## A look at Portland

Our experience in Portland, which is also aggressively implementing sustainable urban design, suggests that they, too, may be arriving at a similar outcome. Portland specifically encourages green roofs with a program established in 2001 for downtown districts that grants additional floor area ratio for a roof that has at least 60 percent green roof or roof garden. Getting more building height is a powerful incentive for developers who want to maximize their rental space.

The Bureau of Environmental Services in Portland regulates green roofs, in conjunction with the Department of Planning, and they have stringent requirements. BES thoroughly reviews green roof and irrigation plans and specifications, as well as maintenance.

GGLO is working on two projects with roof gardens/green roofs that are going through this process. Portland's approach, though very focused on intensive green roofs, speaks to issues similar to those found in the Seattle Green Factor worksheet.

For instance, all plants must be drought-tolerant. Plants will also be on a strict watering schedule during the first three years and an even stricter schedule after that — a low water regimen from May through October only. Irrigation is required and needs to be planned carefully, with each zone responding to varied micro-climatic elements and location. An efficient subsurface drip system with a low evaporation rate was the obvious answer. Seattle's proposed Green Factor includes small but not insignificant bonuses for drought-tolerant plantings and high-efficiency irrigation.

Though the plant selection criteria are not so specifically spelled out in terms of square footage, plants do need to cover submitted green roof areas within one year. This requirement echoes the Green Factor approach of maximizing square footage of vegetation.

Both programs aim to make urban environments more sustainable and more aesthetically pleasing to pedestrians and users by making them more visibly green.

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## The Question of Greywater Reuse

Why isn't greywater reuse a more common practice in Seattle? Is it illegal? We asked Craig Riley of the Washington State Department of Health and here is what he told us.

"The short answer is that you in Seattle probably cannot reuse greywater in a home, at least right now. The legal reasons are complex, but we are moving toward resolution. First, please note that I am responsible for the public health impacts from reusing reclaimed water and that greywater is not reclaimed water.

WA State law, RCW 90.46.140, allows for the beneficial reuse of greywater in this state and allows either the WA State Department of Health or the local health office to issue a permit "according to rules adopted by the department". To write and adopt 'rules', which is the bureaucratic name for regulations, state agencies are required to have legislative direction.

The WA State Department of Health was directed by the legislature to write and adopt greywater rules by legislation passed during last year's session as part of an overall law that requires DOE, with input from Health, to complete rules for water reclamation and reuse. The time frame for completed rule(s) by the legislation is around June, 2010. This process has begun. I will be sitting in on a meeting that will last most of today which is the third meeting of the advisory group required by the legislation to be involved in writing the rules.

On the local level, there are three concerns you will need to deal with.

First is the local health officer. Local health officers have the authority to issue a permit for many things that are not allowed on the state level and could issue a permit for greywater reuse if they chose to do so. To date, I know of no permits that have been issued. Please be aware that local health departments and my department are not the same organization, so we have no formal communications regarding this issue.

The second concern is the water supplier. Any home served by a public water system, such as the City of Seattle or even a home owner's association, is required by other, long standing state regulations to have a cross connection program in place that is to assure protection of water in the distribution system from contamination from backflow or cross-connections with non-potable water.

Public water system's authority for protection stops at the service meter or property line (barring an agreement with the owner to enter any building or premise to survey and assure compliance). Public water systems are required to have reverse-pressure backflow assemblies [RPBA] installed on the service lines entering the building or home. These are expensive plumbing devices that the home owner generally has to pay for. They are required to be installed at least one foot above the ground surface, require annual testing to assure they are working and can lower pressures on the downstream side of the meter.

If a home were to get a permit for greywater reuse inside the house, for such a use as toilet flushing, the water system would require an RPBA on the water service or a shutoff water supply. There are no other options. This is a very significant problem to water systems since well over 1/2 of all of the water borne disease outbreaks that occur in this country are caused by distribution system problems, mostly backflow incidents.

The final hurdle would be getting a local building permit. Again, this department has no influence over these permits. It is my understanding that the Uniform Plumbing Code prohibits greywater or reclaimed water for use in a residence for toilet flushing. So far, we have reclaimed water projects proposing to use our Class A reclaimed water in group residences, and local building officials have denied permits. The likelihood of receiving a local building permit for greywater reuse for plumbing seems low at this point.

The result is that greywater reuse at this point is difficult. But, because reclaimed water and greywater reuse is all about providing better water supply management, the ability to reuse greywater will be a reality. At this time, I have no idea as to when that process might in place, except that it will be before June of 2010. I do appreciate your interest in this subject, and want to encourage you to remain hopeful." - **Craig Riley**

### Conserving Precious Water through Innovation

We did learn that in 2006, Officials for both King County, WA, and the city of Seattle, approved Frederick, Winfield & Associates new Brac greywater system, for residential installation. Brac's greywater system recycles the greywater from the shower, bath and laundry, filters it, and reuses this water for the toilet tank. Builders can qualify for up to 20 points per home on the Built Green checklist.

## ONE EARTH ONE DESIGN

### A Commercial Green Space Remodel

The space for One Earth One Design involved a tenant improvement of a 3000 sq ft. space in a newly constructed mixed use building. The project involved designing a sustainable retail store (2000 sq ft.) along with an interior design studio (1000 sq. ft.). Construction began in August 2006 and the retail space opened for business November 2, 2006.

The concept of the retail store was to design it so it looked and felt like a home. There is a living room, dining room, library, full working kitchen, bedroom, and full-functioning bath. The store also works as a showcase for Sandy Campbell's interior design work. Sustainability was the main focus throughout the project.

The location in North Seattle was determined based on its proximity to Sandy's home, good southern and western daylight exposure and easy access for clients from surrounding areas. A full working bathroom with a shower was installed so the owners could bike to work.

Sandy has been doing residential and commercial design for over 18 years with a focus on sustainability for the past 7. She started a web site in 1997 with whatever sustainable products she could find at that time, with the dream of opening a retail store to showcase eco-products.

### Materials used in construction:

**Concrete stained floors** - the first installation of a new water-based concrete stain in the state of Washington and possibly the west coast

**Cork flooring** - in office area with water-based polyurethane finish

**AFM Safecoat paint** - no-VOC

**Hemlock baseboard and door trim** - used w/ OS hard wax oil finish

**Low-voltage and Xenon lighting**

**Kitchen cabinets** - Neil Kelly, no-formaldehyde, water-based finishes, FSC certified wood

**Energy Star appliances**

**Water filtration** - installed in the kitchen

**Dual- flush toilet**

**Recycled aluminum panels** - used as a design element.

**Kerei board** - reclaimed stalks of the sorghum plant used as the backing for signage

**Recycled glass tiles** - installed in kitchen and bath

**Urban salvaged wood** - used as countertops and desk bases.

**FSC certified plywood** - used for POS and kitchen bar countertops

**Sandy Campbell**

**One Earth One Design**

**206.418.8120**

**sandyc@oneearthonedesign.com**

**or visit [www.1earth1design.com](http://www.1earth1design.com)**

## The Living Building Challenge

**It's time to move beyond 'platinum' to a true level of sustainability- the Living Building!**



Imagine buildings as elegant and efficient as a flower. Imagine a building that is informed by the eco-region's characteristics and that generates all its own energy with renewable resources, that captures and treats all of its water on site and that uses resources efficiently, but for maximum beauty.

The Cascadia Region Green Building Council is issuing a challenge to all building owners, architects, engineers and design professionals to build in a way that that will provide all of us and our children with a sustainable future. **The Living Building Challenge** attempts to raise the bar and define a true measure of sustainability in the built environment, with what is currently possible and given the best knowledge available to date. Projects that achieve this level of performance will be the most sustainable in North America and not merely less bad. Cascadia feels compelled to release **The Living Building Challenge** to provide a signal to the green building industry where it needs to head in the next few years if we are to address the daunting challenges ahead. The Living Building is performance based, not prescriptive, there are no credits, just prerequisites and this challenge is meant to support LEED by setting a new vision.

For more information contact Jason McLennan, email [jason@cascadiagbc.org](mailto:jason@cascadiagbc.org) or visit <http://www.cascadiagbc.org/resources/living-buildings>.

## Use the solutions you sell!

A 54' Solar Electric awning and a solar hot water system provide clean, green energy for this Built-Green member company, Northwest Mechanical, Inc. "We believe in using the products that we sell," says owner Buzz Burgett, "and that includes a 95% high-efficiency boiler, comfortable in-floor radiant heating, and two solar energy systems."

The 3.42 kilowatt Photovoltaic (PV) system consists of 18 Sanyo 200-Watt solar modules grid-tied with a Xantrex inverter. It feeds free energy into the business's electric service panel, offsetting utility power every time the sun shines. On weekends, the meter often spins backwards! By strategically mounting the modules as an awning over the south facing 2<sup>nd</sup> floor windows, summertime shading now reduces the air-conditioning load significantly, providing additional benefit.

The Apricus 22-tube solar hot water system uses high-efficiency evacuated tube technology that works even when the sky is cloudy or overcast. Combined with a 60 gallon stainless steel solar hot

water tank and differential controller, the system has produced water as hot as 148 F.

With a 24-hour service support line, 15 service vans, licensed professional plumbers, pipe-fitters, HVAC, and a professional engineer (PE) on staff, Northwest Mechanical adds a level of experience and professionalism to the solar industry in Washington. Each member of our solar team has completed Solar Thermal and/or Solar Electric PV training through Solar Energy International (SEI). Our solar installation chief, Jon Lange, has installed more than 1,000,000 watts of solar (PV) over the last 3 years; more than all other Western Washington dealers combined!

Now is a great time to take advantage of a 30% Federal Tax credit for installing solar. Come by and see our systems as they supply us with free energy!

**Northwest Mechanical, Inc.**  
**3204 NE 145<sup>th</sup> Street, Shoreline WA 98155**  
**206-GO-SOLAR (206-467-6527)**  
[www.nwmechanical.com](http://www.nwmechanical.com)

## Creativity with a Conscience

Imagine stunning wall finishes that aren't harmful to you. Step into a timeless old world interior. ***Creativity with a Conscience!*** That is the motto for Sage Wall Artistry!

Welcome to the world of wall artistry! Now it is possible to blend traditional "faux finishing" techniques with environmentally responsible materials and practices. The end result is something unique and distinctive! Interiors no longer need to simply have flat paint to be healthy. Now, depth, dimension, and character are possible with the use of mediums that don't harm air quality. Viola! "*Creativity with a Conscience*" is born.

Sherri Gamble, the founder of Sage Wall Artistry, has always had a concern for preserving indoor air quality, since she suffered from asthma and allergies during her childhood. It's also during that time that her creativity began to flourish. While training in architectural wall finishing, she noticed that the industry as a whole did not pay close attention to the safety of materials used. She observed that high-odor agents were often used to create finishes, and began to seek out healthier alternatives to create similar decorative effects.



The **Seattle Street of Dreams 2006 House #4 "Casa Montecito"** showcased the possibilities of these eco-friendly materials. The wine cellar was finished in a lime & marble plaster, and was also stained in a low-odor glaze.

Sage Wall Artistry also specializes in other materials such as American Clay Earth Plaster. The possibilities for this product are endless, from a subtle finish to a bold accent for your walls! Overall, Sage Wall Artistry's goal is to create the most beautiful wall finishes ever imagined while also being keenly aware of the products used and practices we employ. "*Creativity with a Conscience*" embraces this ethic! Visit [www.eco-finish.com](http://www.eco-finish.com) to learn more!

## CONRAD FOREST PRODUCTS

### A New Guild Member with a New Green Product

By Andy Jones, Conrad Forest Products

"Mold requires three things to grow: organic matter (such as wood), mold spores and water. Mold is everywhere, it always has been. In a new building, mold will start to show up within months."

- **Dr. Mani Skaria, Ph.D.**, *Texas A&M University*

"Perhaps the most vexing problem in the construction industry is wet lumber, and all of the attending mold, rot, fungus and insect problems that result from wood components being exposed to moisture. Conrad Forest Products is proud to announce our decision to be the first and currently only operating applicator of **GreenSpec** Listed **BluWood** in the Western U.S.

Lumber is an ideal host for retaining moisture and fostering the growth of fungi. To date there has been no truly effective means to protect wood from unpredictable job-site conditions, household humidity, leaky pipes, water intrusion from roofs, chimneys, windows and doors, and other contributors to the problem. Only a very small portion – typically two percent – of the lumber in a home is pressure-treated to offer some level of protection against rot, fungus and insects, but **BluWood** offers protection to all of the other wood components in a home – dimensional lumber, engineered wood, OSB, trusses, rafters and sheathing.

The first part of the dual-technology system is Perfect Barrier's Infusion Film. Applied by the factory to wood components, the proprietary film encapsulates wood substrates to form a water-repellant, vapor-permeable barrier that controls liquid moisture absorption yet allows moisture vapor to escape. In effect, the treatment lets the wood 'breathe,' which helps maintain a normal moisture balance, while preventing mold growth on the dried film.

The second part of the Perfect Barrier System is the DOT Wood Preservative, a proven fungicide and insecticide borates solution that resists decay and provides exceptional protection from rot fungi and wood-ingesting insects, including subterranean and Formosan termites – all without adding carcinogens, heavy metals or solvents to the treated material. **BluWood** has proven to be non-corrosive to hangers and hardware and will not compromise the structural integrity of the wood members.

**BluWood** lumber is warranted against mold growth

on the dried film, as well as against fungus and termites for the life of the structure. The warranty is transferable to the successive qualified titleholders for 30 years, and provides a new level of assurance for what is often a family's largest investment: their own home."

Conrad Forest Products is a family owned business that has been in the lumber pressure treating industry for nearly 50 years. The company is headquartered out of North Bend, OR and has other sales and/or production centers located in McMinnville and Rainier, OR; Arbuckle, Sacramento, Ceres, West Covina and Lake Forest, CA; Boise and Craigmont, ID; Spokane Valley, WA; and Butte, MT. I have been with Conrad Forest Products since graduating high school in 1998.

I was hired to work at the North Bend, OR manufacturing and distribution facility as part of a program to employ college bound high school graduates. The lumber industry paid better than flipping burgers while trying to earn tuition money, so I jumped at the opportunity. I continued to return to CFP during the Summer and Winter breaks from school, learning more about the industry every time.

I was offered a job with Conrad full time after graduating College, as have 5 or so other recent College graduates. CFP still employs 2-5 "College Kids" during summer and winter breaks; the only job requirement is that you be enrolled fulltime in classes the rest of the year. I think, due to the recent influx of 20-somethings, CFP has had more of a focus on the "green" building industry. As a result of their focus, I was steered toward the Guild as a great resource for finding out what is important to the green builder. We joined just a month or so ago, and I look forward to becoming more and more involved.

**Andy Jones**  
**Conrad Forest Products**  
**1-800-499-2662**  
**www.conradfp.com**  
**aj@conradfp.com**



## Musings of a Lumber Hugger

By Ted Reiff, The ReUse People

First, I have to admit that I am not a woodworker, nor do I have a woodshop in my garage. However, I do love wood. I always have.

My first knowledge of the beauty of wood came from admiring the sculptures carved by my uncle, Bob Knauer, when he was a student at the Cleveland School of Art. He placed third in a juried show when he was in his sophomore year with a sculpture of his left hand carved from an exotic piece of wood he had collected during his WWII travels as a foot soldier. For my eighth birthday, he gave me a 15-foot high, hand carved totem pole complete with winged beasts and other critters I cannot remember, although I always told my older sister that she was the model. When I was a teenager, Uncle Bob made custom gun stocks for one of my rifles and my .410 shotgun, and beautifully carved rosewood grips inlaid with ivory initials for one of my dad's handguns.

Now, decades later, here I am in the deconstruction business salvaging lumber among other things. While I get a kick out of seeing an old craftsman window, or a beautiful 1930s porcelain pedestal sink, seeing a unit of old 2x4s salvaged from a deconstructed house really turns me on--weird huh? We look at a window or a sink and think of the craftsmanship that went into making it and how difficult, or at least expensive, it would be to replicate it. Yet it is still that piece of lumber that gets my attention. I guess it's the memory of those beautiful things Bob carved that gets me thinking about the next life that board is going to have. Windows and sinks don't have much choice in their afterlife. They may be used as decorative hangings or planters, but their form doesn't change. But a chunk of lumber has infinite possibilities.

The ReUse People sell the lumber from deconstruction projects into a myriad of markets. Sometimes a chunk of lumber becomes a framing member in a remodeling project. Truthfully, that's probably where the vast majority of it goes. Even without the proper grade stamp, lumber can be used for framing as long as it's a non-structural element, or the local inspector or structural engineer signs off on its use. But even the lowly 2x4 can generate some excitement. It might go into a new green construction project, or wind up in the wall of a poor family in Mexico who buys one of our trailer loads to build or improve their little casita.

Other uses are more glamorous, of course.

The Wooden Duck in Berkeley turns our old growth, Douglas Fir into beautiful furniture. A mill produces tongue and groove flooring from some of our lumber. A post-and-beam builder uses larger dimensional beams in the construction of new custom homes. And double-drop and shiplap redwood siding is often expertly resurfaced to match the siding on existing period homes.

Straight-grained Douglas fir and maple bowling alley lanes and gymnasium floors have wound up as floors, tables, countertops and bars from Ketchum, Idaho, to Columbus, Ohio--from Bahia de Los Angeles in Baja to the Tonga Islands and beyond for all I know. Still, for me it doesn't matter the species, dimension or grade. It's wood, it's got warmth and its going to serve another great purpose for someone, somewhere.

This is a great business! We serve a worthy purpose locally in each of our present locations and will do so in locations that are still a dream. We keep reusable resources out of local, over-burdened landfills, and people all over the world benefit from our actions. "Think globally and act locally" was just a chant 30 years ago. Today, for the employees of TRP, it is a mission.

Over the 13-plus years we have existed, TRP and its Certified Deconstruction Contractors have deconstructed hundreds of houses and scores of commercial buildings. Last year alone we deconstructed over 200 buildings. Approximately 50 of those were partial deconstruction projects and the balance were complete. An average project is between 1,500 and 2,000 square feet and we typically salvage over 12,000 board feet of lumber from each project. In 2007 we expect to complete 275 projects. That translates into over three million board feet of lumber in one year alone.

So, for a former investment banker what's the bottom line? Hell, I don't know, but for an old lumber hugger it means a great big smile and maybe another story.

**TRP offers the following green services and products: Building donation and deconstruction • Building Material salvage • Building Materials distribution • Great deals on reclaimed building materials and lumber • Project management • Consulting services • Reuse and recycling plans.**

**Brad Gunn, Regional Manager**  
bradgunn@TheReusePeople.org

## Building A Green Kitchen

For most architects and developers, building a green kitchen means using non-formaldehyde, non-toxic substrates (which could take the form of plywood, particleboard, MDF or bamboo-ply), combined with low-VOC finishes, and Energy-Star appliances. Well, that's certainly a very good start, and if that was all there was to it this would be a very short article. The choices available for substrates and finishes are growing very rapidly and keeping up with the market is a real challenge. The good news is that unlike in the past, we have many choices.



This article describes a green kitchen I designed, built and installed in a new home. Hopefully, it will give you ideas beyond substrates and finishes--which I won't spend time on as they are now the 'old-news' in green kitchens. Many of the concepts can also apply to remodels.

The house is a mountain cabin with a modest 750 sq ft footprint and an equal sized, but offset, loft area above. This creates a roof for the west facing front porch, which keeps the summer sun off of the windows, and a cathedral ceiling above the great room. The cabin has minimal eco-system impact as it sits in the corner of a 25 acre site which has a creek on the opposite end of the property. The building is oriented along an east-west axis and thus is ideally situated for a future 2.5kw photovoltaic installation on the roof. The kitchen is modest in size and is adjacent to the dining and living room areas, all of which comprise the east facing great room. The large low-e windows provide spectacular views of the Tetons as well as significant daylighting throughout the great room.

The floor underlayment consists of exterior ply and the great room/kitchen floor is sustainably harvested 'character grade' madrone. The knots in the madrone are filled with a black water based filler and the floor received two coats of OSMO Polyx-Oil. In our initial tests, we tried using an oil based filler but discovered that the black filler turned grey when the Polyx-Oil was applied.

The kitchen countertop has two components. The bulk of the L-shaped counter consists of dark grey Squak Mountain Stone. In addition to its beauty and functionality, the high mass of the Squak Mountain Stone also allows it to act as a thermal sink. Within the long run of the counter, adjacent to the built-in cook top, is a piece of end-grain recycled butcher block fir. The butcher block received a coat of Bio-Shield herbal oil which is safe to use with food. The backsplash above the counter consists of small 'stacked stones' and in the area of the cook top there are glass tiles above the backsplash.

And while it has nothing to do with the green aspect of things, I'll mention that the double sink is a 'butterfly' shape and sits in the corner of the L shaped counter. Since the cabinets below sinks and in corners each represent significantly under-utilized space in most kitchens, combining them allowed this to be kept to a minimum.

The veneer used for the cabinet door and drawer faces was birch bark. Tree bark is typically waste and is rarely used for furniture or cabinetry. Using a vacuum bag veneer press, water-based glue was used to adhere the veneer to the substrate. As the veneer is not uniformly flat (it gets pretty gnarly around the various small knots) it took a few attempts to figure out how to get it to adhere completely. Eventually, by sandwiching a layer of bubble wrap between the veneer and a hard board, we were able to get a good result with the vacuum press.

If you're like me, you probably are always pondering how to creatively integrate more green aspects into your projects. I hope that this helps to stimulate your thinking.



**Bob Margulis owns Ravenworks Joinery, a new NW EcoBuilding Guild member which creates eco-friendly cabinetry, furniture, kitchen and bath remodels.**

## Footprint at the Bridge

If the faux craftsman townhomes being built all over Seattle have got you cringing, then this new project in Fremont will be a breath of fresh air.

Jason Morrow of Footprint Developments, Marc Pevoto & Sara Imhoff of Johnston Architects, Eric Dann of BTL Engineering, Peter Apostle of Springline Design, Shawn Oram of Ecotope, Jack Johnson of OUTDOORstudio and LEED Consultant Alistair Jackson of O'Brien & Company make quite a team when it comes to the ambitious new project aptly named Footprint at the Bridge.

Footprint at the Bridge will consist of seven private townhomes with shared underground parking in the Fremont neighborhood of Seattle. While currently occupied by the Bridge Motel, construction is anticipated to begin in late summer 2007. With a cornerstone location off the Aurora Bridge, the site enjoys sweeping views of the Cascades and Lake Union and is within a few blocks of the Fremont entertainment and retail core. While all seven units are joined together physically and are united in color and detail, the architects used the irregularly shaped site and the existing topography to give each unit its own identity.

Sustainable building practices were employed throughout the design process. Additionally, the project is seeking a LEED Gold certification status. Marc Pevoto, principal for Johnston Architects says "All members of the project team have been on the same page from day one. Having an owner who is highly committed to the architectural process and broad-spectrum sustainability issues is a significant source of motivation for us. Embedding sustainability in the design process is of great benefit, rather than merely a means to an end, i.e. a LEED rating."



Our goals include connecting with nature and the regeneration of urban habitat, celebrating the rain, and the overall reduction in energy demand. Of particular importance is the re-use of stormwater for toilet flushing and irrigation use. Rainwater is collected from the rooftop and courtyard areas and conveyed to a large cistern in the garage, where it is filtered and then re-used on an as-needed basis. Solar panels are currently being considered as an additional method of energy savings to complement the aggressive energy conservation measures. Significant effort has also been made to substantially reduce the use of products containing PVC and urea formaldehyde.

From a mechanical perspective, goals include providing superior indoor air quality, conserving precious water and fossil fuel resources and reducing overall carbon footprint. This building is projected to save over 50% of the energy used in a standard Washington code based building of the same size. The project is targeting a 50% reduction over IECC (International Energy Conservation Code) and is in line with the current AIA 2030 building challenge for all new developments. Potable water use reduction is targeted at over 100,000 gallons per year for the project relative to a standard code based construction.

All seven units are surrounded by a contiguous cloistered garden space. Due to the proximity to high traffic volumes and associated noise adjacent to the site, the use of a concrete screen wall was implemented at the exterior property line to substantially limit visual and auditory impacts. The screen wall, to be blanketed in vegetation, wraps the site perimeter and diminishes in height as it extends to the east side of the site, which is a much quieter, more single family atmosphere. The screen wall allows for privacy at the ground-floor levels, which serve as the main entry for all the units, providing intimate and lush garden spaces to be enjoyed from both inside and outside the units.

The townhome units were carefully arranged in a U-shape, which provides a central garden courtyard/community open space. The orientation of the U-shape allows for good southern exposure and also provides access to and from the garage below. The roof at the courtyard stair cover is an intensively planted green roof which spills into a courtyard water feature. Native plants and edible species were used throughout the gardens. Also, all rooftops were furnished with a series of planters used for screening and individual vegetable and herb gardens. All rooftops are flat terraced spaces with a covered seating area allowing inhabitants to revel in the wonderful views from atop the building.



**Footprint at the Bridge Townhomes**

Project specific features include:

- Condensing natural gas boilers provide space and domestic hot water heating needs at upwards of 92% heating efficiency. Low temperature hydronic heating system reduces extra energy typically required with higher temperature heating systems.
- Waste-water heat recovery heat exchangers reduce Domestic Hot Water (DHW) heating energy by 25% compared with a standard code based building.
- Low-flow showers reduce DHW water heating needs by another 25% over code based buildings.
- Energy Recovery Ventilators (ERV) triple as a dedicated fresh outdoor air supply system; a central ducted forced air heating delivery system and a single exhaust system to replace all spot exhaust fans. This multi-function approach keeps incremental costs lower while providing superior air quality and
- ERV's filter outside air contaminants to MERV 12 filtration level providing excellent indoor air quality.
- Optimized glazing selection and strategic south facing window overhangs will maximize heat gains in the heating months and reduce solar gains in the summer months
- Solar PV's mounted on each unit penthouse roof is estimated to generate over 7000 kwh per year and provide each owner with almost \$300 in annual electricity bill credits using local and federal incentives. PV's will provide 12-15% of annual electricity needs for the project.
- Spray applied mastic cellulose insulation, caulked sheetrock joints and gasketed j-boxes along with whole house ERV will reduce outside air infiltration by 2-3 times over a standard code based construction.
- Spray applied mastic cellulose insulation is 100% recycled content, provides superior sound absorbing properties and is completely non-toxic and non-carcinogenic with zero off-gassing.
- Natural ventilation, night time mass pre-cooling and optimal glazing selection and shading have eliminated the need for mechanical cooling.
- Low flow plumbing fixtures will reduce potable water use by 58,000 gallons over a standard code based building.
- A large rainwater harvesting and reuse system used for flushing toilets and site irrigation will offset 55,000 gallons of fresh potable water use each year.
- Energy Star appliances and advanced lighting package will contribute significant savings in annual electricity use.
- No PVC used on the entire project.

## A New Seattle Green Building Blog

The Seattle PI has a host of fun and informative reader blogs which now includes a new Seattle Green Building Blog called "Building Seattle Green".

"We are a collective of professionals dedicated to exploring green building and the technologies, practices, materials and designs that are at the forefront of this movement. We will work to dispel the myth that green building is more expensive and we hope that this blog not only informs but inspires people, businesses and communities to join us in creating a more sustainable urban environment."

While "Bus Chick", "Educating Mom" and "Seattle Real Estate Professionals" are currently the top picks the Building Seattle Green Blog has been getting a fair amount of attention with about 3500 readers a month.

A fluctuating panel of experts currently includes Aaron Adelstein of Built Green, Alicia Silva of Synergy Studio Design, Marni Kahn of the USGBC, JR Fulton LEED Architect, Martha Rose of Martha Rose Construction and Danielle Johnson of Green-Works Realty.

Our goal is to reach out and get dialog started on a number of green building topics. What are the pressing issues, what are the hot projects, what technologies are being used and who's using them? We invite you all to log on, comment and send questions and suggestions.

<http://blog.seattlepi.nwsourc.com/greenbuilding/>

## Chapter Updates and Calendar

### Southwest Oregon (Eugene)

**Contact:** Rudy Berg at rudyberg@rio.com

### Western Columbia (Portland)

**Contact:** Russell Holzinger at 503.724.9414 or IAM@InspirationalStudio.com

**Updates:** The Portland Chapter has started holding monthly evening networking events at a local public house. They will continue through April when we will begin our educational series of events. Check our web calendar for details. We are actively recruiting new talent to make our efforts more spectacular. If you are interested in making a difference please contact Russell Holzinger or come to one of our events.

### South Puget Sound (Olympia)

**Contact:** Debra Shapiro at debra@greenworksrealty.com

### Central Puget Sound (Seattle)

**Contact:** Justin Fogle at justin@ecobuilding.org

**Updates:** We had a very successful fundraiser for the 3<sup>rd</sup> Annual 10x10x10 turning in over 180 people. Our Membership Appreciation Party with Solar Washington, Seattle City Repair and the Seattle Permaculture Guild was a good change of pace with many people meeting for the first time there. The music by Anna Coogan and North 19 soothed everyone and we are very thankful for all the sponsors for both events. 2007 looks like a very promising year with many things coming down the pipeline.

Our monthly meetings are still happening at the Phinney Neighborhood Center (thanks to work trade) on the 4<sup>th</sup> Wednesday of the Month at 7-9pm in the Basement Lecture Hall (Lower Building). We kicked off our first educational class of the 2007 "Warmth" series with a bang with Alistair Jackson sharing tons of information about Green Building Rating Systems. The "Warmth" Series also includes talks on **Sustainable Heating Systems** on February 28<sup>th</sup> and **Carbon Neutral** on March 28<sup>th</sup>. Following that, we have the "Renewal" Series which looks to be a phenomenal series with **Feng Shui / Wabi Sabi** on April 25<sup>th</sup>, **Sustainable "Green" Landscaping** on May 23<sup>rd</sup>, and **Deconstruction** On June 27<sup>th</sup>.

As summer kicks in full gear, we shift into the "Social" Series with a party on July 25<sup>th</sup>. **Selling "Green"** on August 22<sup>nd</sup>, **10x10x10 Fundraiser** – September 26<sup>th</sup>, and **Creating Sustainable Density** on October 24<sup>th</sup>.

### The Peninsula Chapter

**Contact:** James Henderson at 360.461.5154 or hendersen@olypen.com

### Central Washington and Central BC

**Contact:** Gary Koch at carpenter\_koch@yahoo.com or 509.962.1427

### Inland NW & Southeast BC

**Contact:** Tom Angell at tom@tomangell.com or 509.747.7647

**Updates:** Since September, the Inland Chapter has been ramping up education for homeowners on the basics of green building. We covered such topics as *Green Materials for your home project: What to look for and where to find it; Shades of Green: strategies, incentives, and benefits of building green; Energy efficiency for the home you are in; Home Improvements and Green Remodeling; Using Reclaimed Building Materials*. Our January event drew a record 85 people!

Future topics in this residential workshop series include: March 20 **Indoor Environmental Quality and your home**, April 17 **Landscaping Projects in the Inland Area**, May 15 **Water Efficiency in the Inland Northwest**.

In addition, our local chapter has partnered with the Go Green Directory and the local chapter of ADPSR to bring in spring lecture series: **Eco-Spokane - Toward a Healthy & Sustainable City**. The first lecture featured Dr. Dick G. Winchell and Gideon Schreiber comparing the sustainable features of Spokane and Oslo, Norway. This event drew 67 people. We are excited about this series! Future lectures will include: March 8 Kelly Lerner; **Natural Remodeling for the Not-So-Green House**, April 12 Dr. Glen Cosby; **Ecocentric Ethics**.

We are currently seeking volunteers to assist with education and event planning. Volunteers are also needed to assist with planning Earth Day events on April 21 and outreach at our booth in the Spokane Home and Garden Show, March 30-April 1. Please contact Tom Angell if you would like to help!

Also, if you have a business that you would like to promote at the Spokane Home and Garden Show, there are still openings in the EcoSmart area of the show. For further information, please contact Don Stephens at 509-838-8222 or [dsteph@sisna.com](mailto:dsteph@sisna.com)

## Events and Updates

**Nature-friendly development practice seminars** presented by Metro in partnership with the Oregon Department of Environmental Quality, the Home Builders Association of Metropolitan Portland, the Environmental Protection Agency, the Clackamas River Basin Council and the Clackamas Soil and Water Conservation District. Series part of Nature in Neighborhoods initiative.

**Tuesday, March 6, 2007**, 8 a.m. to noon, Earth Advantage training room, 16280 SW Upper Boones Ferry Rd., Portland, Cost: \$10

**Speakers:** Steve Murray, PE, KPFF Consulting Engineers; Mike Faha, principal, GreenWorks In partnership with Earth Advantage, Murray will present a case study of the New Columbia affordable housing project that features pocket swales, filter boxes and dry wells. This project retains 90 percent of the water on site, eliminating roughly 80 percent of underground pipes compared to a conventional development. Faha will present the latest examples of green development practices. Marketing experts Steve Kokes and Leslie Carlson from Coates Kokes will discuss successful strategies for marketing green developments, and Gail Shaloum, landscape architect from Metro, will provide an overview of habitat friendly practices and the latest information on permits and codes.

**Wednesday, March 21, 2007** 11:30 a.m. to 1 p.m. NW Natural, 220 NW Second Ave., Portland Cost: \$20 for BOMA members; \$30 for non-members.

**Speakers:** Amber Clayton, Portland Bureau of Environmental Services' Clean River Rewards program; Kevin Robert Perry, landscape architect, Nevue Ngan Associates. At this luncheon, in partnership with the Portland Metropolitan Association of Building Owners and Managers, Clayton will discuss stormwater management retrofits in the City of Portland, including general guidance on construction and permitting, and how those retrofits can qualify ratepayers for discounts on their Portland stormwater utility fee. Perry will discuss design and construction of nationally recognized green street and rain garden projects.

Marketing experts Steve Kokes and Leslie Carlson from Coates Kokes will discuss successful strategies for marketing green developments, and Gail Shaloum, landscape architect from Metro, will provide an overview of nature friendly practices and the latest information on permits and codes.

Interested parties are encouraged to register online at Metro's website [www.metro-region.org/nature](http://www.metro-region.org/nature) or by calling 503-797-1850. Two hours continuing education credits are offered to BOMI, Real Estate Brokers and Certified Master Builders for all seminars except for the March 6 seminar, which offers four hours of credit.

### **Living Future 07 - Seattle, WA April 25-27, 2007**

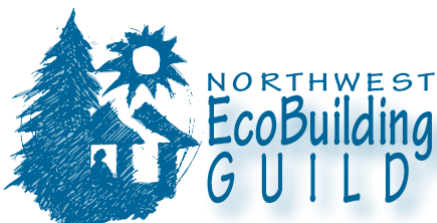
Get ready for two and a half days of exciting dialogue that will attract leading minds in North America to address climate change and the path to a future of Living Buildings!

The Cascadia Region Green Building Council and the AIA Seattle Committee on the Environment are working together to host a regional green building conference April 25-27, 2007 in Seattle, entitled Living Future.

Ed Mazria, FAIA, mastermind of the 2030 Challenge kicks off the conference on April 25th. On April 26 and 27, Jason F. McLennan will roll out Cascadia's vision of a sustainable future through Living Buildings, and new initiatives including our Cascadia Fellowship Program, Pharos and more.

The conference will also include a bookstore, a fellowship awards program, speed networking, sustainable building tours, project and material displays and a variety of other exciting events. A session called "15 Minutes of Brilliance" will highlight the best and brightest ideas for how we can move to address climate change in revolutionary rather than in incremental ways. This will be a competition for the best ideas, and only the top four ideas will be presented. There will be prizes, there will be celebrities, and this event will be a catalyst for great change.

At Living Future you'll learn, you'll be inspired, and you'll have the opportunity to create a road map for tools we need regionally to shape our future. This is the event not to miss.



Check the Guild website  
[www.ecobuilding.org](http://www.ecobuilding.org) (click on *Calendar*)  
 regularly to stay abreast of all events sponsored by  
 Guild Chapters and Members!

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## Some Case Studies

The sample case is an approximately 14,000-square-foot, mixed-use urban infill project in the Capitol Hill commercial district. The open space and landscape area are on the second floor, at the residential level. The courtyard landscape has raised planter boxes with small trees, shrubs and groundcover plantings. Ground floor commercial uses have a pedestrian-friendly streetscape, with street trees, outdoor furniture and special paving. This project was granted a departure from the required 20 percent open space to 10 percent.

According to the worksheet, the project's 1,260 square feet of plantings and 21 trees garner less than a third of the vegetated square footage Seattle Green Factor would require. To see how this project could be designed differently to comply, we looked for other options with relatively high values that would suit our client's budget and program.

The project is planted with as many large trees and shrubs as the open space can support. Because of feasibility, maintenance and cost issues, avoiding permeable paving, vegetated walls or a water feature made sense. Inevitably, the green roof option became more and more appealing.

Adding a green roof over the residential units put the tally over the 0.3 target with many obvious advantages. The project is pursuing LEED certification, and a green roof would help achieve that goal. Improved thermal comfort, lower utility bills and reduced storm water run-off are all long-term benefits of green roofs, which offset installation and maintenance expenses.



Photo courtesy GGLO

**The Louisa, a mixed-use building in Portland's Pearl District, has successfully combined green roofs with roof gardens.**

## Future projects

In Seattle, open space and landscape area are common departure requests from the current code. The Green Factor would almost certainly change that. By clearly distinguishing open space from vegetation factor, it places a strong emphasis on green features and elevates them beyond mere amenities into necessary urban attributes. In most neighborhood commercial zones, open space requirements would likely be reduced from 20 percent to 5 percent of the gross residential area.

We can make no predictions about the ultimate outcome. Every urban site obviously has its own unique opportunities and constraints. The Green Factor is structured to offer a variety of options that promote green space suitable to every situation.

What we can say is that in constrained spaces with limited budgets, our tendency would be to focus on green elements that offer the greatest value and benefit to the client while giving up the least floor area ratio.

Green roofs and vertical green are two factors with a high point value (0.7) that seem to represent the most opportunity. Green roofs offer many additional benefits. Vertical green is a lower-cost option that would also use existing square footage and offers the benefit of greater visibility to pedestrians.

Implementing the Green Factor might be tedious and spark its share of controversy, but the sustainable and aesthetic benefits are numerous. Overall, it would be advantageous for all parties, and represents one more step toward sustaining urban livability in Seattle.

*Marieke Lacasse, ASLA, and Shaney Clemmons are both LEED Accredited Professionals and part of the Landscape Architecture Group at GGLO. This article was reprinted with permission from the DJC.*

*For more information on the Seattle Green Factor, including background brochures, worksheets and plant lists, visit the Seattle Department of Planning: <http://www.seattle.gov/dpd/permits/greenfactor/>*

**About Us:** The Northwest EcoBuilding Guild is the Pacific Northwest's leading association of residential builders, architects, designers, consultants, and suppliers concerned with ecological building. The Guild's mission is to function as an educational forum to facilitate building practices that protect human health, encourage sustainable resource usage and foster long term economic vitality. To learn more about the Guild and its activities, check out our Web site at [www.ecobuilding.org](http://www.ecobuilding.org). For membership information go to [www.ecobuilding.org](http://www.ecobuilding.org) or [membership@ecobuilding.org](mailto:membership@ecobuilding.org).