Introduction

After five years of design and plan development work, the first Optimum Performance Home® is now under construction. This is the thirteenth article in the series documenting the design and construction of the first Optimum Performance Home. The project has been selected by the U.S. Green Building Council (USGBC) for inclusion in the national Leadership In Energy & Environmental Design (LEED®) for Homes pilot program, their new green build certification initiative, and the goal is Platinum certification.

The home is being built at The Sea Ranch, located in Sonoma County, along the Northern California coastline of the Pacific Ocean, approximately 110 miles north of San Francisco. The showcase project is exemplary of the “Ultimate Home Design®” concept, which integrates age-friendly universal design with the best sustainable building practices, while exerting minimal impact on the natural environment. Universal design is the inclusive, non-discriminatory design of products, buildings, environments, and urban infrastructure; as well as information technologies that are accessible to and useable by (almost) all. With respect to home design, the idea is to design and build homes that have no physical barriers, thus sustaining people of all ages and all abilities in a functional, comfortable, and aesthetic lifestyle.

A building-science systems approach to home building is the cornerstone of the project, with emphasis on the relationship between the home’s components and the envelope they contribute.
create. Also paramount is good stewardship—proper regard and respect for the rights of neighboring homeowners and the surrounding natural setting, and resource efficiency. The goal is to optimize occupant health, comfort, and safety; maximize energy efficiency and structural durability; and minimize environmental impact. In addition, the aim is toward providing a nurturing home environment to support independent living and sustainable lifestyles.

Part I of this case study series appeared in Issue 1, January/February 2006. The introductory article covered the project scope. Thereafter, each issue has contained a part of the continuing series by working through site planning and preparation; Low-Impact Development (LID); further refinements to the site plan and drainage design; The Sea Ranch Design Committee-approved architectural/structural and grading/drainage submittals with conditions that translated to clarifications on certain building components and material finishes; particular aspects of the home’s mechanical plan; structural aspects of foundations, structural walls incorporating Insulating Concrete Forms (ICFs) and Structural Insulated Panels (SIPs), as well as roofing; the acoustical design of the dedicated Optimum Performance Home Theatre™ and rear-projection room; interior design approaches and materials; kitchen, bath, and home fixtures; universal design architecture; fire risk mitigation; and energy generation.

A Final Approval letter for The Sea Ranch Association Construction Performance Permit was issued on October 11, 2006, which is required by Sonoma County prior to obtaining a county building permit. The Sea Ranch “Approved For Construction” permit was issued on October 11, 2007 following the approval of final construction plans by the Sonoma County Building Department. Six permits have been issued: site plan, landscape plan, septic system, geothermal boreholes, grading, and building. Commencement of construction with initial site grading, foundation, and mechanical infrastructure is underway. Completion of the home is anticipated for November 2008. It is our intent to stage a full-on presentation at the November 19 to 21, 2008 U.S. Green Building Council’s Greenbuild International Conference and Expo in Boston. Our presentation will reveal the step-by-step process for creating our first Optimum Performance Home—expected to be one of the highest rated, if not the highest, LEED for Homes Platinum residential home in the world!

FastTrack Scheduling

An integral part of the planning for the construction timetable is mapping out the construction time period using AEC Software’s FastTrack Schedule® 9.2, the company’s flagship project management (PM) software for both Microsoft® Windows® and Apple® Mac® OS X (our preferred format) environments, including Microsoft Windows® Vista® and Macintosh OS X v10.4 Tiger platform. FastTrack Schedule 9.2 is an easy-to-use, cross-platform project-management solution that enables builders, developers, architects, and contractors to effectively plan, estimate schedules, track, and communicate project objectives. FastTrack project information fully integrates with Microsoft Project® (.mpp) files.

FastTrack Schedule 9.2 allows our project team to know exactly which suppliers are involved in each stage of the project, and the schedule shows them precisely when the materials will be delivered. Predefined columns track dates, durations, resources, costs, calculations, ID codes, work categories, and more. FastTrack Schedule 9.2 also tracks changes to the timeline for task starts and completions, allowing for site and work flow flexibility planning, and project change orders. Scheduled, revised, and actual dates/durations make it easy to track activity progress. Thus, our project team is able to track and understand the scheduling and cost impacts of the different changes that
The elevations of the Optimum Performance Home at The Sea Ranch

The Sea Ranch

The elevations of the Optimum Performance Home at The Sea Ranch are made throughout the construction project. In this way, we are able to create charts showing the progress of the construction, which helps to stay on schedule. For example, we are able to give a schedule to each subcontractor showing when they are expected to complete their work. This allows subcontractors to understand the “bigger picture” and the importance of staying on schedule and within budget.

This is accomplished with FastTrack Schedule 9.2 using color, fonts, patterns, outlines, images, and notes to simplify the intricate details of the construction project for our team to understand. The colorful presentation-quality schedules clearly communicate project status and goals to our team.

And with support for Calendar (.ics) files, scheduling can be published in this standard calendar format for team members to view through a Web browser, as well as the program’s standard Calendar View. FastTrack Schedule 9.2 serves as an important educational tool for both the construction team and myself, as the project leader. The program provides tremendous flexibility to select and format information needed by each member of our team. It provides an intelligent framework for our team to discuss progress and the options and impacts of alternatives that every construction project is faced with. As such, FastTrack Schedule 9.2 is a fantastic tool to enable our team to better plan, present, manage, and complete the first Optimum Performance Home project on time and within budget. Using the program’s schedule-building tools, FastTrack Schedule 9.2 is helping us to more efficiently meet the specific Platinum-certification LEED for Homes requirements. This is an important feature of the program, as “green” sustainable building projects are quite different than traditional construction projects. There are new materials, processes, unique costs, and much more time and resources utilized in the planning process.

To learn more about FastTrack Schedule 9.2, visit www.FastTrack.com. Below is the breakdown of the initial site preparation and grading process and foundation work. This will be discussed in-depth in Part XIV, and an outline will be provided for the next stage of construction consisting of the Amvic ICF (Insulating Concrete Form) and ThermalR SAVE SIP (Structural Insulated Panels) walls and roofing.

Pre-Construction Start Meetings

Site Work

Temporary Electrical Power
Install Beam Systems Time-Lapse Pro Construction Camera
Activate Water Service
Clear Lot Vegetation
Lay Out House Pad
Escavate Optimum Performance Home Theatre, Alcove, Wine Cellar
Lay Out Footings
Dig Foundation Footings And Install French Drain
Set Forms, Tie Rebar Steel, Hold Downs And Anchor Bolts
Form Underground ICF Home Theatre, Alcove, And Wine Cellar Walls
Prepare For In-Floor D-Box® Technologies Custom Motion Platform In Home Theatre
Wetly Foundations, Site Placement/Inspection
Dig Large Pond, Septic And Cisterns Areas
Place Underground Cistern
Place Underground Septic Tank
Drill Geothermal Bore Holes, Place Piping And Grout
Run Spunstrand HVAC Ducking For Home Theatre

Foundations

Pour Footings
Form Foundations With Energy Edge
Conduit Trenching For Upnoron PEX Plumbing
Run Plumbing Walsk
Install Gravel Around Plumbing
Run Plumbing Conduct And Supply
Run Electrical And Low-Voltage Conduit
Layout Brown Central Vacuum System
Install Gravel, Vapor Barrier And Sand
Install Slab Relbar
Lay Out Upnoron Radiant Heat Floor PEX Piping
Underlab Inspection
Pour Slab
Waterproof Home Theatre, Alcove, And Wine Cellar Walls
Backfill Foundation

The initial site preparation work is being done by Sonoma County Builders, Inc. under the direction of Noble and Loyal Davis. This company, based both in Santa Rosa and Point Arena, California, has had extensive experience in excavation for both residential and commercial/civic projects for over the past 35 years. They are very supportive of the project and sensitive to the environmental concerns and protections that are in place for the project. Prior to the start of their excavation work, the tall grasses were cut down to dirt by Steve Glaze (Steve Glaze Backhoe). This top layer of roots is being stockpiled and allowed to form a “top soil” compost for later spreading back over the site, just prior to landscaping, with indigenous vegetation and trees. John Feeley, our supervising contractor and his team consisting of Jerry Feeley, Brad Estate, and Aaron Phillips will perform the foundation work. Weeks Drilling & Pump Company, based in Sebastopol, California, will drill the five 310-foot-deep geothermal bore holes under the direction of Chris Thompson, CEO. Don Bartlett will install the WaterFurnace geothermal and Spunstrand underground air-conditioning ducting system. Bill Wilson Environmental Planning and Design, LLC, with Dylan Coleman, principal in Mt. Shasta, California-based Wonderwater, are responsible for the on-site water-management systems, including the pond, drains, and rainwater cistern catchment.

California’s New Building Codes

I have covered extensively in Part XI, September/October 2007 (Issue 11), the fire mitigation provisions in the design of the Optimum Performance Home at The Sea Ranch. California will implement changes to the state’s building codes effective January 1, 2008. The changes pertain to building materials as part of a two-prong approach for protecting a building from wildfire. This is critically important to homes located at The Sea Ranch, as this development is designated as being located within a Wildland-Urban Interface Fire Area and the particular site in a Very High Fire Hazard Severity Zone.

The law currently requires that homeowners clear 30 feet and do fuel modification to 100 feet around their buildings to create a defensible space for firefighters to protect their homes. The new building codes are designed to protect homes from being ignited by flying embers, which can travel as much as a mile away from a wildfire. The new codes require non-combustible or fire ignition-resistant standards designed to prevent embers from igniting a structure. This includes provisions...
The requirements for the iBeam Time-Lapse Pro are power, an Internet connection, and a suitable location to mount the camera. In our case, the camera will be used in the exterior and interior design and construction of the home that would mitigate fire risk. Thus, as it turns out, the Optimum Performance Home will be in full compliance with the new California building codes, and in fact, exceed those provisions with attention to fire-risk mitigation in the interior of the home. Thus, the home is designed and is being constructed to resist the intrusion of flame or burning embers projected by a vegetation fire.

As a further means to document the construction of the first Optimum Performance Home, an iBeam® Systems Time-Lapse Pro all-weather on-site construction camera will be installed and operational throughout the construction period. This will allow us to build a high-resolution photo archive of the entire project, including stunning 1920 x 1080p (progressive) high-definition time-lapse movies every month.

Photos will be captured and automatically uploaded to iBeam's secure server every 15 minutes from 6:00 am to 6:00 pm each day and will be viewable through a link from the Ultimate Home Design Web site. Furthermore, the images can be easily e-mailed or printed to document job-site conditions. This will allow our project team and all those interested in this project to view up-to-date progress on the construction of the home. iBeam will allow our team to stay informed about the flow of work and will keep an organized record of the process, using live job-site images.

The WildBlue 26-inch satellite mini-dish will be featured as a 1920 x 1080p high-definition time-lapse movie and will become part of a high-definition television program and educational documentary that my production partner, Steve Michelson of Steve Michelson Productions, and I are producing. Steve owns Lobitos Creek Ranch, a full-service production and postproduction studio located in the coastal hills south of San Francisco, California at Half Moon Bay. They offer a wide variety of services for video and digital media production, including development, co-production, editing, animation, postproduction, DVD, Web-enabled DVD, and multimedia design and authoring. With 30 years of experience in producing video, Steve's work includes concerts, documentaries for public television, and communications for non-profits and corporations.

iBeam's other construction cameras are the iBeam OnSite and iBeam Handheld. The OnSite monitors construction activity live, while the Handheld provides a cordless Web cam, which allows live interior and detail construction views of a project. For more information on iBeam's construction cameras, visit www.i-beam-systems.com.

WildBlue Satellite Speed Internet

In order to facilitate capturing the high-resolution images taken on-site by the iBeam Time-Lapse Pro construction camera, we are using the “always on” WildBlue Satellite Speed Internet system developed by WildBlue Communications, Inc. and offered as part of EcoStar’s DISH® Network satellite services. The offer is provided separately under the EcoStar brand name, and sub-branded as “powered by WildBlue.” The new WildBlue Enterprise Solutions’ satellite services system offers business-class broadband connectivity via state-of-the-art satellite technology.

WildBlue uses a 26-inch satellite mini-dish equipped with both a transmitter and receiver for two-way satellite connectivity to the Internet. WildBlue service does not require cable or phone lines. The service works with both Microsoft Windows, including Windows Vista; and Apple Macintosh OS X, including v10.4 Tiger; and the iBeam Systems’ Time-Lapse Pro construction camera. WildBlue’s approach is based on next-generation, two-way wireless Ka-band spot beam satellite technology, which lowers the cost of providing high-speed Internet services over the Internet. WildBlue uses industry-standard technology in its consumer premise equipment. The resulting low-cost structure enables an affordably priced high-speed Internet service that is available across the country. The highest currently available speed is the Pro Pak level, which offers download speeds up to 1.5 Mbps and upload speeds up to 384 kbps. The WildBlue Enterprise Solutions’ satellite service will provide even faster speeds.

The WildBlue 26-inch satellite mini-dish will be installed at site level facing due south. At the conclusion of the project, the entire construction photo archive will be featured as a 1080p high-definition time-lapse movie and will become part of a high-definition television program and educational documentary that my production partner, Steve Michelson of Steve Michelson Productions, and I are producing. Steve owns Lobitos Creek Ranch, a full-service production and postproduction studio located in the coastal hills south of San Francisco, California at Half Moon Bay. They offer a wide variety of services for video and digital media production, including development, co-production, editing, animation, postproduction, DVD, Web-enabled DVD, and multimedia design and authoring. With 30 years of experience in producing video, Steve's work includes concerts, documentaries for public television, and communications for non-profits and corporations.

As previously noted in this series, the home design integrates all of the concepts advocated in Ultimate Home Design. The goal is to demonstrate how modern building products and methods can make life safer, more comfortable, and more enjoyable. The science of optimum performance homes concerns itself with construction ideas that use less energy, are quieter and more comfortable, have fewer problems with material degradation, provide clean air and water, and do less damage to the environment. As an integrated and holistic design, the house will serve as a permanent residence that allows its occupants to age in place. The high-performance building systems to be employed are designed to exceed California building code requirements and resist natural disasters more effectively than a code-minimum house, even with the new California code requirements that require use of non-combustible or fire ignition-resistant building materials. Built with stronger building materials and superior technologies, the home will be safer, allowing homeowners greater peace of mind. The Optimum Performance Home qualifies for the Fortified...For Safer Living® program of the Institute for Business & Home Safety (www.ibhs.org/business_protection). This program specifies construction, design, and landscaping guidelines to increase a new home's resistance to natural disaster.

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In addition, the home will meet the guidelines and qualifications for the U.S. Department of Environmental Protection’s ENERGY STAR®, the EPA’s WaterSense™, and the American Lung Association® Health House® programs. It also will meet the requirements of the National Association of Home Builders’ (NAHB) Model Green Home Building Guidelines, the Sustainable Buildings Industry Council (SBIC) Green Building Guidelines, and the “Green Points” program. Sonoma County and The Sea Ranch Association are now considering this program for adoption.

Furthermore, the home’s design was the subject of a case study analysis presentation before the Custom Residential Architects Network (CRAN), Full Spectrum Practice Convention of the American Institute of Architects on October 20, 2007 in Chicago, Illinois.

The home is also a case study of the California Energy Commission in terms of energy-efficiency applications and an advanced water-saving plumbing plan.

Finally, the home is a national showcase for CEDIA (Custom Electronic Design and Installation Association), and is the subject of a series of articles on the design and installation of the electronic lifestyle components in the home. These articles are featured in CEDIA’s Electronic Lifestyles® quarterly magazine.

The Setting

The Sea Ranch is an internationally renowned 5,000-acre environmentally protective residential development situated within a pastoral and forested coastal enclave and nature preserve approximately 110 miles north of San Francisco, California. This stunning development, now celebrating its 43rd anniversary, straddles a ten-mile stretch of Highway 1 along a stretch of uniquely beautiful rugged coastline, ending at the northern tip of Sonoma County and the south bank of the Gualala River.

The Sea Ranch is widely regarded as a unique and remarkable residential development. During the 1960s and 1970s, The Sea Ranch was at the forefront of environmentally responsible development. It was conceived and designed by architects and landscape architects who wanted to provide a harmonious mixture of custom homes and pristine natural Northern California landscape in oceanfront, meadow, and forest environments. In fact, the Sea Ranch concept and its architecture are recognized in schools of architecture around the world, and it is frequently used for case studies in environmental and architectural design. The first condominium complex to be built on the southern coastal bluffs of The Sea Ranch is now a registered national architectural site.

Single-family development occupies approximately 2,500 acres without borderline fences or other visible delineation of property lines. The remaining acres are permanent green-scape commons with 45 miles of nature trails for walkers, bicyclists, and equestrians. Each home is custom designed by an architect/architectural designer following site-specific design guidelines and is situated off a private road network without curbs, sidewalks, or streetlights. The Sea Ranch is a very unique residential development woven into a tapestry of buildings and nature and committed to environmental preservation. The development includes 2,288 lots for single-family custom homes, with 533 remaining to be developed (1,754 already developed and 29 under construction).

The Sea Ranch is managed by The Sea Ranch Association, a Common Interest Development (CID) with an elected volunteer Board of Directors, and supported by numerous volunteer committees. All development on The Sea Ranch is subject to design review and the approval of a Board-appointed autonomous Design Committee. The Design Committee is presently comprised of architects and landscape architects, though it does not include anyone with experience in vegetation management or “green” sustainable building design. A legal set of Covenants, Conditions, and Restrictions (CC&Rs) govern the development and are designed to protect The Sea Ranch concept.
The Home

The Sea Ranch Design Committee imposes upon designers architectural building blocks derived from the original rural structures found on the northern California coast. Designers are expected to apply their creative energy to render various arrangements and deviations to arrive at a custom solution that specifically responds to the site. Successful plans submitted to the Design Committee address the issues of passive solar positioning, wind, glazing (window) layout, privacy between neighbors, vegetation protection, view preservation, topography and grade changes, roof slopes, appropriate exterior materials and finishes, and other exterior design considerations—all within the building and site design.

A focus of the optimum efficiency Home’s design is to stand as a showcase for the “green” movement and demonstrate means of reducing a home’s impact on the planet through the use of Low-Impact Development. Designers have been environmentally responsible and sustainable building materials. It is hoped that the home will become a case study for a “Green Points Program” suited to the scale of The Sea Ranch.

The home’s 3,272-square-feet living space (4,441-square-feet total building “footprint,” including garages, covered walkways, courtyard, and decks) will be arranged in a three-building compound using a well-sealed, well-insulated, super-tight building envelope that reduces temperature fluctuations and enhances overall energy efficiency. This arrangement provides for an alcove courtyard protected from the prevailing wind from the northwest. The home is designed with differing spatial experiences throughout to encourage exploration. The home will display innovative interior design and be furnished in a contemporary Frank Lloyd Wright style appropriate to its dimensions. The home design connects the indoors and the outdoors with covered walkways, a courtyard, decks, and a garden to expand livable space, without requiring heating or air conditioning. The home is designed in accordance with biophilic design principles with abundant and excellent use of natural light and natural indigenous landscaping planned. (For an in-depth analysis of the biophilic attributes of the home, please read “Biophilic Design,” “Biophilic Design Attributes,” and “The Interior Design Process, Part I: Synthesizing Sustainability, Universal Design, And Technology” authored by Julie Stewart-Pollack in Issue 3 (May/June 2006), Issue 10 (July/August 2006), and Issue 10 (July/August 2007), respectively.

The main-floor living area is designed to accommodate the capabilities of all occupants without any challenging physical barriers, even for the elderly and disabled. The home design features a ground-level open plan for the living room, dining room, master bedroom suite, and spacious kitchen with solarium, exhibition cooktops, and home management system.

The second building in the compound is designed to accommodate a large state-of-the-art “The Home Theatre” with integrated rear-screen projection room and a home office. The third building will include a two-car and boat garage, workshop, main-level guest bedroom and laundry room. The second level of this building will have two guest bedrooms, a bathroom, and a dedicated library/home theatre/soundproof music room distinguished by a high-tower feature. To insure universal access to this floor, the design provides for an Otis® Gen2 residential elevator.

The entrance and walkways that connect the three buildings and the solarium will be enclosed with insulated- and solar-gain-reduced-tempered glass. There will be a seating area at the vestibule entrance to the home. The main entrance vestibule will serve as an oversized mudroom. The driveway, area around the garage, guest parking, and entrance to the home—as well as all paths—are designed in accordance with The Sea Ranch guidelines governing exterior hard-surfaced paths. All such surfaces are pervious to virtually eliminate water runoff. The surface will be packed with decorative gravel to enhance the natural appearance of the home’s setting. There will also be a dedicated equipment room off the courtyard, which accommodates the Uponor® and WaterFurnace® radiant-heating apparatus, TrendSetter® solar hot water storage tanks, Microtherm’s Seisco® on-demand electric tankless water heater, and other equipment.

The backup Kohler® generator is housed within a separate weather-resistant tower located off the rear of the guest passageway and guest bedroom, within the fenced dog run. This tower is designed to optimize the northwest wind performance of the PacWind® Seahawk® vertical-axis Savarrieus® wind turbine disguised within (see Part 12, November/December, Issue 12).

The home site is nestled on an almost-acre parcel at the edge of a forested area of the southern section overlooking the Pacific Ocean, offering distant water views. Some of the home’s features will include a Benissimo® slate outdoor courtyard, two thick solid hardwood Ipé deck areas, in-ground Dimension One Spa® Amoré Bat hot tub, Finesse® Finnish sauna, and underground wine cellar. The orientation of the home on the site is designed to take advantage of the warm northwest solar heating and cooling. Good site and land planning will result in minimal land disturbance and preservation of natural features and environments.

Landscaping will consist of The Sea Ranch-approved indigenous vegetation with low-water requirements and unique water conservation features, including two ponds and a stream supported by rainwater catchment and captured runoff. Site grading has been specifically planned to enhance the project’s placement in the watershed, and the design incorporates the principles of Low Impact Development to minimize runoff from impervious surfaces and mimic the natural hydrol- ogy in overall effect. The resultant water harvesting will then minimize the use of irrigation, and the increased infiltration and retention will passively support the native landscape. Additionally, a gray water system will be used for undersurface plant irrigation.

The Courtyard

The courtyard is a focal point of the Optimum Performance Home’s three-building compound design. The courtyard creates a villa outdoor living space experience, and is designed in accordance with biophilic design principles with abundant and excellent use of natural light and complementing natural and indigenous materials to contribute to the overall life-enhancing experience the home will nurture. There are six aspects to the design of the courtyard that facilitate such an experience.

• Dimension One Spas’ Amoré Bay hot tub
• Finesse® Finish sauna
• Rais & Wittus Firebird Outdoor Fireplace/Grille
• Kohler BodySpa Ten-Jet Tower Shower
• Runco Outdoor Weatherproof Ultra HD LCD Display
• KichenAid Outdoor Kitchen

An integral design element of the courtyard are Dimplux® outdoor Ventura Ceramic Radiant Heaters. Rather than simply heating the air, the Radiant Heaters produce infrared energy, which actually heats objects in front of them. It works much like the natural energy of the sun. The durable Ceramic Radiant Heater has powerful 240-volt ceramic heating elements that provide effective warming at any outdoor temperature. The Ventura features silent operation with no distracting visible light output. An adjustable mounting bracket lets one target the heating zone. Three Ventura Ceramic Radiant Heaters will be employed in the courtyard.
Dimension One Spas’ Amoré Bay

The new Dimension One Spas Amoré Bay hot tub will be featured in the courtyard area. The D1 Bay Collection® Amoré Bay is an ultimate in performance and comfort spa that employs D1’s renown energy efficiency and reliability.

The Vista, California-based company holds in excess of 30 patents that underscore an eco-savvy mentality. D1 was introduced to the Optimum Performance Home project by Michael Galica, owner of the eco-friendly Marin Outdoor Living showroom in Greenbrae, California. Dimension One’s Bob Halm, CEO and co-founder with his wife, Linda, is committed to constantly innovating new sustainability ideas in D1 spas that are environmentally and ergonomically friendly.

In an age when “green” sustainability is deemed paramount, Dimension One Spas leads the environmental crusade in the home hot tub market by creating products that exemplify sustainable luxury.

Dimension One Spas incorporates such body experience features as:

- **Hydrodynamics**: D1’s extensive study of human anatomy, ergonomics, fluid mechanics, aquatic massage, acupressure, and reflexing led them to develop a new field they named “hydrodynamics”—the study of human energy transfer within an aquatic environment. Using state-of-the-art modeling software, D1 engineers design hot tubs in virtual space, giving them unprecedented control over materials, and thus ensuring the ultimate in comfort.

- **Dynamic Massage Sequencer**: Introduced in 1999, DMS was the world’s first programmable hydrotherapy massager. The built-in massager focuses on six specific therapy zones and offers pause and speed controls.

- **UltraLounges**: This “spa-within-a-spa” lounge chair-inspired section of the tub features patented BioForm™ seating in a “no-float” angle design to keep occupants solids in their seats instead of spinning around; sculpted leg contours; and acupressure therapy for wrists and hands. These features provide the ultimate in full-body hydrotherapy.

- **Neck Jet Pillow**: The first and only height-adjustable spa neck jet pillow.

Dimension One Spas incorporate such clean energy features as:

- **EnviroTect™**: The UltraRite slip-resistant interior of each hot tub is surrounded by a durable, all-weather exterior made from 100 percent recycled plastic milk containers. EnviroTect is the most environmentally-friendly exterior available for spas today. This 100 percent recycled material is environmentally stable (HDPE); does not give off any harmful fumes; and is highly recommended by the Healthy Building Network, a national organization of green building professionals and environmental health activists. EnviroTect requires virtually no maintenance and unlike wood, the all-weather EnviroTect requires no staining or painting. EnviroTect is exceptionally resistant to moisture, fading, insects, splintering, warping, and other hazards of environmental exposure.

- **Vision™ System Controls**: The Vision System provides a natural clean-water alternative to harsh, chemical-based filter systems. The Vision Cartridge uses silver catalyst technology to kill 99.96 percent of bacteria on contact. The cartridge lasts up to six months, significantly reducing chemical maintenance.

- **Water-Management Technology**: D1 water-management technology cuts down the need for chlorine in the spa water from three to five parts per million to 1 ppm, which means no more itchy, flaky skin, faded swimsuit, irritated eyes, or strong odors from chlorine.

- **UltraPure® Plus Water Management System**: D1 Amoré Bay spa features the UltraPure Plus Water Management System, the most sophisticated water-management system in the industry. The five-step filtration system purifies the spa water 24/7 and includes the smart use of an ozonator, an ultraviolet (UV) germicidal light, zinc and silver sager to prevent bacterial growth (to totally eliminate surface bacteria), and a filter. D1’s patented system provides the cleanest, clearest spa water in the industry. Without this balanced, carefully engineered system more chemicals and maintenance time would be required, and the water would still not look as clean and clear.

The UltraPure system uses low-power, 98-watt circulation pumps to purify the tub’s water. Eighty-four percent of the power that UltraPure uses is returned back to the water as heat.

The water source will be filtered rainwater harvested off the Evergreen slate roofs (see Part VI, November/December 2004, Issue 6).

- **Fast Flo Heater**: D1 spas incorporate the most durable and reliable spa heater on the market. The variable output on this stainless steel heater provides optimal heat recovery and lower energy consumption.

- **100 Percent Insulated**: D1 was the first company to manufacture a fully insulated spa for inground or aboveground use. The hot tubs are 100 percent foam insulated with closed-cell urethane—used in commercial freezers—not only absorbing equipment noise for the quietest operation possible, but also minimizing energy loss to the lowest energy costs. Additionally, high-density E-Z Lifter foam covers are precision fitted with linear heat seal seam s to prevent heat loss. D1 spas use up to 85 percent less energy than traditional in-ground, non-insulated spas.

- **Hydramax® Pumps**: The D1 aquatic massage system is backed by powerful Hydramax aquatic jet pumps. These pumps are expertly engineered and powered for 100 percent efficiency—this means a small pump can deliver a nearly silent pump that retains the jet power of its larger counterparts.

- **M•Drive**: D1’s cutting-edge M•Drive, available exclusively on the company’s high-end Bay Collection series hot tubs is a highly intuitive, menu-driven spa controller, which provides effortless control over virtually every aspect of a spa’s operations and functions. M•Drive features large buttons; a wide, bright, high, easy-to-read screen; and an intuitive menu structure that makes the M•Drive an ergonomically friendly spa controller.

The Amoré Bay features the transformative use of lights, sights, sounds, colors, and Liquid FX hot water effects to evoke a transcendent hot tub experience. Contemporary spa features include roomy, barrier-free seating; bar top accent lighting; stylish architectural uplighting; the industry’s first and only four-foot water brook; three water fountains; and two UltraLounges. At the recent Aqua Expo at the Mandalay Bay Resort in Las Vegas, I met with Amoré Bay designer Victor Walker and Michael Mantell, PhD, a successful psychologist and D1 consultant. We discussed Amoré Bay design’s eco-friendly concept and various health topics such as oxytocin—the mammalian hormone known by sex researchers as the “cuddling hormone,” and believed, by some researchers, to be a beneficial link between oxytocin and social anxiety, memory control, cardiovascular functions, and thermoregulation in menstruating women. Wow! We also discussed water’s power to invigorate the spirit, replenish the soul, refresh the mind, and relax the body, while helping to wash away tension, rekindling relationships, and igniting passions.

Dimension One Spas’ Amoré Bay hot tub seats up to seven adults with a water capacity of 415 gallons. The spa will be sunken into an area of the courtyard so that the spa’s ledge is at a seating height for ease of entry. Units simply sit on the spa’s wraparound IPE deck seating and slide over into the spa. The spa area design complies with the universal design accessibility standards for the home.

The Valentine 2008 limited edition Amoré Bay spa will be installed. The tub’s color is Candy Apple Red with EnviroTect tan architectural trim.

Finnleo Finish Sauna

A Finnleo Custom-Cut Sauna will be a featured experience in the Optimum Performance Home. The authentic Finnish sauna features European styling with a striking touch of elegance in a healthy environment that provides traditional soft dry heat.

A Finnleo Custom-Cut Sauna with a floor-standing Maxi Soft Heat 6 kW heater has been specified with 70 pounds of Finnish Vulcanite rock. The authentic Finnish sauna features European styling with a striking touch of elegance in a healthy environment that provides traditional soft dry heat.
The evening before bedtime, and wake up to the start of the day with a healthful sauna bathing experience at the perfect temperature. The sauna measures seven-feet-wide by five-feet-deep and will be fitted with a Douglas fir 36-inch-wide door with a 26- x 65-inch double-pane tempered insulated glass window to meet the energy-saving and universal and biophilic design criteria for the home. The floor will be an extension of the slate flooring in the courtyard, with a no-barrier entry. Various Finnleo sauna accessories are specified, including a one-gallon copper water bucket, copper ladle, 15-minute sand timer, vapor-proof sauna wall light and lampshade, headrests, beech and aluminum frame thermometer, beech and aluminum frame hygrometer, wooden vent grill and ventilation valve, four-peg clothes hanger, pair of Nordic Pine handles, and Abachi wood sauna sign with a green border.

Runco® Climate Portfolio™ WP-42HD LCD Monitor

A Firebird outdoor barbeque grill and fireplace, created by award-winning Danish architectural designer Bent F DK, will be in the courtyard. The Firebird by Ranco® is made of durable Cor-Ten steel, which permanently oxidizes to form a rich reddish brown coating. Built to be maintenance-free and to last a lifetime, the Firebird will be used as an outdoor fireplace and barbeque grill, and enjoyed as outdoor sculpture.

The display has a wide viewing angle (178 degrees) to maximize viewing enjoyment from widely dispersed seating positions, including viewing by those enjoying the Amore Bay spa. The WP-42HD features a high-definition widescreen flat panel monitor ready for the outdoors. The WP-42HD utilizes advanced LCD technology and glass with special element-proof bonding to deliver a high-definition widescreen flat panel monitor ready for the elements. Featuring a 1366 x 768 native resolution, combined with Ranco’s exclusive Vivix™ internal video processing for outstanding imagery, artifact-free scaling and pristine reproduction of both native film and native video formats (480p, 720p, 1080i), the WP-42HD delivers exceptional video quality, features, flexibility, and connectivity to achieve the ultimate custom outdoor viewing experience.

For more information on this advertiser, circle 09.
high-gloss black bezel incorporated into a stylish enclosure design.

A K2 Mounts remote-controlled motorized flat panel display mount will provide telescopic control to 12 inches out from the flush wall mount on the exterior equipment wall door. This will allow the Runco WP-42HD to be tilted 7 degrees up and 20 degrees down, and to swivel 56 degrees right to left, assuring full view of the monitor from just about anywhere in the courtyard.

A custom-designed outdoor high-performance sound audio system will be installed by James Loudspeaker.

KitchenEd Outdoor Kitchen

The fully equipped outdoor courtyard kitchen will feature KitchenEd 304 stainless steel construction appliances. The 36-inch-wide built-in grill (KBUJ607TS) features a 29K BTU infrared sear burner, two 20K BTU U-shaped stainless steel main burners, and a 15K BTU infrared rotisserie burner and 36-inch wide rotisserie. Next to the grill will be a 13-inch-wide built-in double side-burner (KBUJ124TS), front to back, with two 15K BTU burners. Under the grill will be a 24-inch-wide built-in warming drawer with slow-cook functionality.

A KitchenEd 30-inch-wide built-in refreshment center (KBVFU271TS) with integrated stainless steel sink and single-control faucet will be featured along with a 24-inch-wide in 6.0 cubic-foot refrigerator (KRFCA06XPSS). There will also be a 24-inch-wide in 6.0 cubic-foot refrigerator (KRFCA06XPSS). There will also be a 24-inch-wide built-in wine refrigerator (KRCA06XPSS) and a 24-inch-wide double side-burner (KBUJ122TS), front to back, with two 15K BTU burners. Under the grill will be a 24-inch-wide built-in warming drawer with slow-cook functionality.

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We understand The Sea Ranch community, we understand that they have to have the right project, a project that makes sense economically. I mean, a green project that doesn’t make sense economically is still a bad project. So, what does “make sense economically” mean? It means that they’re building it at a level that makes sense for the market in which they’re either trying to sell it or rent it or use it for themselves. So you’re not going to get into a situation where you’re over-leveraged, where you can’t pay the debt service. Once the economics are there, there are lots of resources that we can help people access on “green building” options. Whether it’s just knowledge, whether it’s contractors, or whether it’s suppliers, we’re well networked in the space and can help people get to the green, if you will.

**UHD Reber:** In the process of doing our Optimum Performance Home project, I’ve come across quite a few mortgage people who want to be “green,” want to do something “green,” do you work with any of those kinds of people?

**Liu:** Not so much so. We haven’t been active in the single-family mortgage space that much because it’s something that we haven’t figured out a way in which to add value. So much of that is commoditized. What we try to do, is to go, is to give, try to add value for people who are trying to build a building or build a community. So, on the mortgage side, we’re not that active.

**UHD Reber:** Were there any factors in our Optimum Performance Home project that triggered you to support it?

**Liu:** Firstly, the economic fundamentals are right. We understand The Sea Ranch community, we understand how the supply and demand dynamic there is a very attractive one, so the base project’s attractive, and second, we definitely love the fact that it’s a very attractive one, so the base project’s attractive.

**UHD Reber:** If I understand, it costs less to finance through you if it’s a green project. What are the mechanics of that program?

**Liu:** They can use any bank ATM. They will accept the fees that the bank accesses them, and then we rebate them.

**UHD Reber:** That is a real benefit. What major green projects are you financing right now?

**Liu:** Well, they range from all sectors, so we are working with clean technology companies and solar power companies to finance specific solar systems. We’re also working with “green” builders to build both home, as well as commercial real estate projects. We are also working with some of the leading players in the “green” consumer product lines, including some wonderful leading organic industry companies like Straus Family Creamery and Cowgirl Creamery.

**UHD Reber:** Fantastic. So where do you see New Resource Bank in two years?

**Liu:** In two years, I think we’re going to continue to grow rapidly. One of the number one questions that’s asked of us is, “When will New Resource Bank come to our community?” by people from as far as South Carolina, from as near as Palo Alto. When there are a lot of customers that want us to be part of their community, we’re going to take that challenge upon us to try to satisfy the demand.

**UHD Reber:** And you made reference to, when you finance a project, it costs less to finance through you if it’s a green project. What are the incentives?

**Liu:** Yes, we give them a price break. They get a slight discount. Again, we do so to further incentivize people to build to a “green”-leadership level, but the underwriting still has to be based on traditional risk matrix, which includes leverage, liquidity, location, and experience of the builder. So, we’re not here to finance projects that don’t make good economic sense.

**UHD Reber:** Do you have any comments you would like to make that I haven’t covered?

**Liu:** Number one is we are a bank first and foremost, so we always focus on delivering banking in the best possible way. We expect our bank to have that core functionality as its primary focus. Additionally, we are a “green” bank that understands our “green” business customers better so we can roll out innovative programs. Better banking plus that additional element will hopefully make it a no-brainer for some people to say, “Hey, I should bank at New Resource Bank.”

**UHD Reber:** Thank you, Peter, for sharing with our readers the story behind the New Resource Bank.