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 usable 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 capabilities 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

Synopsis

“Green” sustainable building projects are quite different than traditional construction projects with new materials, processes, unique costs, and much more time and resources utilized in the planning process.

At the outset of the design of the first Optimum Performance Home, due consideration was given to incorporating building materials, systems, and assemblies used in the exterior and interior design and construction of the home that would mitigate fire risk, and 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.

In this issue, the focus will be on the design of the courtyard in terms of the outdoor “room” experience contributed by the Dimension One Spas® Amoré Bay spa, the Finnleo® Finish Sauna, the Rais & Wittus Firebird Outdoor Fireplace/Grille, the Kohler® BodySpa Ten-Jet Tower Shower, the Runco Outdoor Weatherproof High-Definition LCD Display, and the KitchenAid® Outdoor Kitchen.

Conserve Fuel
Conserve Energy
Conserve Water

Solutions...

Water. Where would our planet be without it? Yet not a day goes by without hearing about water restrictions. Drought-stricken areas pop up everywhere. The toilets in our homes guzzle 40% of the water we use – more than what we use for the laundry, dishes, cooking and drinking combined!

FLUSHMATE® the most water efficient flushing technology in the world, offers a proven solution to help you conserve water: toilets equipped with our 1-gallon pressure-assist technology can save you tens of thousands of gallons per year effortlessly, and efficiently without sacrificing performance.

To find out more, call 866-873-1842 or go to www.flushmate.com/solutions to find out your Enviro-Mentality.

for a healthier planet.
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 now 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
This is all 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)Cal (.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.FastTrackSchedule.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 ThermalSAVE SIP (Structural Insulated Panel) 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
- Verify 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 Uponor PEX Plumbing
- Run Plumbing Wells
- Install Gravel Around Plumbing
- Run Plumbing Conduit And Supply
- Run Electrical And Low-Voltage Conduit
- Layout Brown Central Vacuum System
- Install Gravel, Vapor Barrier And Sand
- Install Slab Reliever
- Lay Out Uponor Radiant Heat Floor PEX Piping
- Undertlab Inspection
- Pour Slab
- Waterproof Home Theatre, Alcove, And Wine Cellar Walls
- Buckhill 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 Feeney, our supervising contractor and his team consisting of Jerry Feeney, 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 Wondervater, 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 homeowner’s 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...

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**iBeam® Systems Time-Lapse Pro Construction Camera**

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 each 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 an iBeam OnSite application. Furthermore, the images can be easily e-mailed or printed to document jobsite 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 jobsite images.

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 mounted on a 20-foot power pole and interfaced with WildBlue® Satellite Speed Internet® provided by the DISH® Network. The time-lapse images and streamed monthly movie will be accessible to everyone by visiting www.ultimatehome-design.com/oph and by signing on with Username: OPHBea Ranch; Password: OPHBeaRanch.

At the conclusion of the project, the entire construction photo archive will be featured as a 1060p 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, distribution, 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 EcoCar’s DISH Network satellite services. The offer is provided separately under the EchoStar 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 service to remote areas by linking customers directly to 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 1 Mbps. WildBlue’s 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.

Once the construction of the Optimum Performance Home is complete, a whole-house high-definition EchoStar DISH Network satellite system with WildBlue Enterprise Solutions’ service will be installed. As well, a LifeSize Communications LifeSize® Room® high-definition video communications/conferencing system over an ubiquitous IP network at 1280 x 720 pixels at 30-frames-per-second video resolution will facilitate video conferencing with the magazines’ Widescreen Review® and Ultimate Home Design® production offices located in Southern California.

**New Resource Bank**

As covered in Part XII, November/December 2007 (Issue 12), our initial approved construction loan was lost in early August just before funds were to be issued due to the “mortgage meltdown” and a harrowing global credit crunch, which has severely impacted new construction financing.

New Resource Bank, the nation’s first “green” commercial bank, which is located in San Diego, recently pulled the project from their database with access to 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 1 Mbps. WildBlue’s 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.

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As the science of optimum performance homes concerns itself with building structures 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.
In addition, the home will meet the guidelines and qualifications for the U.S. Department of Environmental Protection’s ENERGY STAR®, the EPA’s (Environmental Protection Agency) 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 534 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 creativity to render various arrangements and deviations to arrive at a custom solution that specifically responds to the site. Successful proposals 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 Performance 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 (LID) and other means of reducing a home's impact on the planet through the use of biophilic design principles with abundant sustainable building materials. It is hoped that the home will become a case study for a “Green Points Program” suited to the site and the context 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 three building components using a well-sealed, well-insulated, super-tight building envelope that reduces temperature fluctuations and enhances overall energy efficiency. This arrangement provides for an al fresco 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 abundant natural indigenous landscaping to enhance overall energy efficiency, reduces temperature fluctuations and 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 also will 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 Seiscon® on-demand electric tankless water heater, and other equipment. The backup Kohler® generator is housed within a separate weather-resistant tower located off the north wall of the two-car garage 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 13).

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 Benishimos® slate-floor outdoor courtyard, two thick solid hardwood Ipé deck areas, in-ground Dimension One Spa® Amoré Bat hot tub, FINexo® Finnish sauna, and underground wine cellar. The orientation of the home on the site is designed to take advantage of the-shoreline and passive 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 hydrology 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 subsurface 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 complementation 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
- Finnexo Finish sauna
- Rais & Wittus Firebird Outdoor Fireplace/Grill
- Kohler BodySpa Ten-Jet Tower Shower
- Runco Outdoor Weatherproof High-Definition LCD Display
- KitchenAid Outdoor Kitchen

An integral design element of the courtyard are Dimplex outdoor Ventura Ceramic Radiant Heaters. Rather than simply heating the air, the Radiant Heaters produce infrared energy that actually heats objects in front of them. It works much like the natural energy of the sun. The durable Ceramic Radiator has powerful 240-volt ceramic heating elements that provide effective warming at any outside 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.

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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 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 Halmi, 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 feature experiences as:
- **Hydromedics**: D1’s extensive study of human anatomy, egonomics, fluid mechanics, aquatic massage, acupressure, and reflexology led them to develop a new field they named “hydromedics”—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 Sequence**: 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 control over virtually every aspect of a spa’s operations and functions. 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.
- **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 mop, gritty skin, faded swimwear, 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, a ultraviolet (UV) germicidal light, zinc and silver sager focuses on six specific therapy zones and offers pause and control over virtually every aspect of a spa’s operations and functions. M•Drive features large buttons; a wide, bright, 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 water, lights, sights, sounds, colors, and Liquid FX hot water effects to evoke a transcendent hot tub experience. Features such as the “Shangri-La” features, which include sculpted leg contours; and the “Shangri-La” features, which include sculpted leg contours; and 64 strategically placed acupressure massage jets; a hand-held massager; and functions. M•Drive features large buttons; a wide, bright, easy-to-read screen; and an intuitive menu structure that makes the M•Drive an ergonomically friendly spa controller.

The benefits of traditional Finnish sauna bathing are legendary: it relaxes muscles and soothes aches and pains in muscles and joints; it relieves stress; induces a deeper sleep; provides recreational and social benefits; flushes toxins and cleanses skin; improves cardiovascular performance; burns calories; fights illness; relieves congestion; and feels good. Every Finnleo sauna is handmade using the highest quality sustainable wood. Every Finnleo sauna is handmade using the highest quality sustainable wood. Every Finnleo sauna is handmade using the highest quality sustainable wood. Every Finnleo sauna is handmade using the highest quality sustainable wood.

Finnleo Custom-Cut Sauna

A Finnleo Custom-Cut Sauna will be featured 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.
Rais & Wittus Firebird Outdoor Fireplace/Grille
- The Firebird by Rais & Wittus 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 barbecue grill and enjoyed as outdoor sculpture.
- The Firebird outdoor barbeque grill and fireplace, created by award-winning Danish architectural designer Bent Falk, will be featured in the courtyard. The Firebird by Rais & Wittus 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 barbecue grill, and enjoyed as outdoor sculpture. The grill has adjustable grill racks that are made of heavy solid stainless steel 5mm rods. The innovative design features stay-cool handles, a built-in warming and frying surface in back where one can simmer sauces or sauté vegetables, and a neat way to store the grill rack when not in use. The chimney creates a strong draft for faster-built fires and then "funnels" the smoke up and away from the chef—and nearby guests.

Kohler® BodySpa Ten-Jet Tower
- A Kohler® outdoor shower will service the Dimension One Spas® Amore Bay hot tub and the Finleo® Finnish sauna. The shower assembly will be the Kohler BodySpa Ten-Jet Tower (K-1000-H2) with separate Kohler MasterShower® Rite-Temp® valve trim with cylinder handle (K-T9492-T7) and Kohler MasterShower Hotel Handshower Kit (K-8520).

Rais 7 Wittus Firebird Outdoor Fireplace/Grille
- A Firebird outdoor barbeque grill and fireplace, created by award-winning Danish architectural designer Bent Falk, will be featured in the courtyard. The Firebird by Rais & Wittus 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 barbecue grill, and enjoyed as outdoor sculpture. The grill has adjustable grill racks that are made of heavy solid stainless steel 5mm rods. The innovative design features stay-cool handles, a built-in warming and frying surface in back where one can simmer sauces or sauté vegetables, and a neat way to store the grill rack when not in use. The chimney creates a strong draft for faster-built fires and then "funnels" the smoke up and away from the chef—and nearby guests.

Kohler® BodySpa Ten-Jet Tower Shower
- The outdoor shower assembly will service the D1 spa and the Finleo Finnish sauna. The shower assembly will be the Kohler BodySpa Ten-Jet Tower (K-1000-H2) with separate Kohler MasterShower® Rite-Temp® valve trim, cylinder handle (K-T9492-T7), and Kohler MasterShower Hotel Handshower Kit (K-8520). The BodySpa Tower is made from tough anodized aluminum for durability in the outdoors. It features ten-jet system waterfall and chromatherapy lighting, electronic jet selection control, remote control, and variable water flow control. A separate wall-mount Kohler Roman Bath Diverter Spout (K-6681) also will be installed. The shower walls will be surfaced with Moving Color® Northern Lights 4 x 4 glass tiles. These innovative waterproof glass tiles are manufactured using the "color infinity," enabling the glass tiles to change hue dynamically, responding to applied heat. The tiles appear black at room temperature and move through the color spectrum when temperature (warm water, radiant heat, etc.) is applied. The moving color is dynamic to the temperature of the heating agent. The shower's ceiling and sidewalls will be fabricated with the UltraGlass® UltraSea® design.

Runco Outdoor Weatherproof High-Definition LCD Display
- High-performance outdoor video will be provided by Planar Systems’ Runco custom home theater brand. The new Runco Climate Portfolio® and its WP-42HD ruggedized weatherproof LCD high-definition display delivers stunning video quality and performance to 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 Runco’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. Engineered for maximum durability, the WP-42HD’s weatherproof enclosure ensures protection from adverse environmental conditions including temperature, exposure to moisture, dust, oils, and intermittent direct water spray. The custom aluminum cabinet is sealed to ensure protection from the elements and features a specially designed interior ventilation system to provide adequate cooling. 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
surround audio system will be installed by James Loudspeaker on the exterior equipment wall door. This will allow the high-gloss black bezel incorporated into a stylish black stainless steel sink and single-control faucet will be featured in the fully equipped outdoor courtyard kitchen. A built-in warming drawer with slow-cook functionality will be a 13-inch-wide built-in double side-burner and 36-inch wide rotisserie. Next to the grill will feature KitchenAid 304 stainless steel commercial-grade appliances. The 27-inch-wide wheeled serving cart will be a K2 Mounts remote-controlled motorized flat panel display mount to provide telescopically controlled to 12 inches out from the flush wall mount on the exterior equipment wall door. This will allow the Runco WP-412H to be tilted 7 degrees up and 20 degrees down, and to swivel 66 degrees right to left, assuring full view of the monitor from just about anywhere in the courtyard.

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

Kitchen Aid Outdoor Kitchen

The fully equipped outdoor courtyard kitchen will feature KitchenAid 304 stainless steel construction appliances. The 36-inch-wide built-in grill (KBNU607TS) features a 29K BTU infrared rear burner, two 22.5K 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 (KBU122TS), front to back, with two 15K BTU burners. Under the grill will be a 24-inch-wide warming drawer with slow-cook functionality.

A KitchenAid 30-inch-wide built-in refreshment center (KBU721TSS) with integrated stainless steel sink and single-control faucet will be featured along with a 24-inch-wide built-in 6.0 cubic-foot refrigerator (KRFCA06EXPS). There will also be a 15-inch-wide built-in automatic ice maker with a 28-pound storage capacity (KUI015NLSS).

A KitchenAid 27-inch-wide wheeled serving cart (KBST170LS) will be included in the outdoor entertainment package along with a 24-inch-wide built-in double-duty drawer unit (KBU142TSS) and a 14-inch-wide built-in trash drawer (KBU141TSS).

Next

Now that we have broken ground and commenced site preparation, this continuing series of articles will focus on the design elements as they pertain to each stage of construction, and will include coverage of the technologies and building systems and the materials used and applied to construct the first Ultimate Performance Home.

The Author

Gary Reber is the President of Ultimate Home Design, Inc. and the founding Editor-In-Chief and Publisher of Widescreen Review® and Ultimate Home Design®. The Optimum Performance Design & Build Resource For Environmentally Enhanced Lifestyle Living™. He is also President of WSR Publishing, Inc which publishes Widescreen Review®. The Essential Home Theatre®. His diverse background in several fields includes an undergraduate, graduate, and postgraduate university education in architecture, community planning, and economic development planning. For years he was a consultant on community and economic development planning. For the past 15 years he has been an editor and publisher of magazines in the consumer-electronics field. Gary can be reached at 951 676 4914 or gary@ultimate-home-design.com.
So it really fit both the market and the development. Using "green" principles and aiming for a "green"-tive, and second, we definitely love the fact that it's stand how the supply and demand dynamic there. We understand The Sea Ranch community, we under-
gage side, we're not that active.

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, is again, try to add value for people who are trying to build a building or build a community. So, on the mort-
gage side, we're not that active.

Were there any factors in our
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?

Yes, we have.

Wind power may be applicable in fewer locations, and there's more of a neighbor's issue, and so forth. But obviously in the right place, wind power has proven to be a good option. Utility-scale wind power is starting to become more economical than some of the con-
ventional fossil-fuel-fired options.

We have a couple of offices but one branch at Howard and
South Carolina, from as near as Palo Alto. When there are a lot of cus-
tomers that want us to be part of their community, we're going to take that challenge upon us to try to satisfy the demand.

And you made reference to, when you finance a proj-
ected, 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 incen-
tivize people to build to a "green"-leadership level, but the underwriting still has to be based on tradi-
tional 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.

Q: 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 bank-
ing 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 under-
stands our "green" business customers better so we can roll out innovative programs. Better bank-
ing plus that additional element will hopefully make it a no-brainer for some people to say, "Hey, I should bank at New Resource Bank."

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

Liu: Thank you, Peter.