

Marina ‘beyond hope’ gets precast concrete makeover

Neglected Idaho resort marina is strikingly re-created for future upscale development with beautiful and durable precast concrete retaining walls

By Sue McCraven

“A picture is worth a thousand words” is a proverb that aptly applies to the rebuilding of Idaho’s Beyond Hope Marina as the project’s “before” and “after” photos reveal a startling transformation. According to people familiar with the area, the resort’s dilapidated boat basin was both humorously and seriously considered to be “beyond hope” and in need of extensive rebuilding. The existing wooden docks, rock-rubble retaining walls and jetties were badly deteriorated. Looking to the future, the resort’s owners and investors were determined to build a new marina that would be elegant-looking, durable and low-maintenance.

In a remarkable example of a “before-and-after” scenario, the physical transformation of the Beyond Hope Marina clearly demonstrates the outstanding aesthetic and structural advantages of precast concrete designs. In a mountain setting on the shores of a large freshwater lake, photos reveal a precast concrete metamorphosis from unsightly, decaying docks and breakwaters to a beautiful new marine facility.

Lake Pend Oreille and the environment

More than 65 miles long and Idaho’s largest lake, Lake Pend Oreille (pronounced “Pon Duray”) is located near Sandpoint in a stunningly beautiful natural setting among the Cabinet, Coeur d’Alène and Selkirk mountains. The marina is situated on the northeast side of the big lake not far from the small town of Hope – and thus the apropos name “Beyond Hope.” The Lake Pend Oreille area is a desirable vacation and recreational region in a pristine setting. The value of the region’s great natural beauty is fundamental to future plans for the resort and marina at Beyond Hope.

Local investors are fully cognizant of the tourism potential in the wellplanned, prudently designed and environmentally friendly development. The state of Idaho’s economy for this region depends in large part on the quality of the region’s ski resorts and numerous mountain and lake recreation and

vacation venues on and around Lake Pend Oreille. Because the 60 acres at the Beyond Hope Resort is prime real estate, the site’s investors are planning a high-end residential development suitable for the region’s potential as a preferred visitor and tourist destination. Approximately eight lakefront townhouses and 45 single-family home sites on inland parcels are part of the master plan for the resort.

Idaho’s Department of Natural Resources (DNR) would not permit any disruption to the lake’s bottom or adverse impacts on the valuable fresh-water fisheries in Lake Pend Oreille during construction operations near the lakeshore. Consequently, marina construction had to take place at low-water levels during the off season so as not to disturb the lake’s waters, bottom ecology or fisheries. A dam controls lake water levels, which fluctuate from 7 feet to 12 feet deep, depending on annual snowfall, water runoff and other climatic conditions. Lake levels are drawn down beginning in September in conjunction with the end of the summer season.

New marina part of up scale development

With these environmental constraints in mind, Beyond Hope’s investors put together an integrated and comprehensive plan to develop the site beginning with a complete reconstruction of the existing dilapidated boat basin. The lakeside resort had long been a typical summer campground and RV site that suffered from lack of upkeep and capital improvements.

Because the water level fluctuates considerably, the option of building floating docks that would rise and fall with the lake’s surface was problematic. The depth of the marina is about 6 to 7 feet during high season. When the lake’s water levels are drawn down in the fall, developers could consider scheduling initial earthmoving operations without adversely impacting the lake’s natural resources or having to resort to erecting expensive sheet piling to protect the environment.

When driving sheet piling to dewater shoreline projects, both the aquatic and bottom organisms

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are adversely affected during driving operations and when the area landward of the piling is subsequently pumped out for construction operations. The site’s investors also wanted to create stylish new docks for the marina that would withstand the test of time. Floating docks were first considered but were found to be less attractive (docks lying on the uneven lakebed in winter) and platforms riding up and down on supports would prove too noisy for the envisioned ambience. Developers felt that permanent boat docks built on steel piles would provide the most maintenance-free design for the marina’s water level fluctuations.

Turning to an experienced marina builder and designer, Dana Martin of Sandpoint, Idaho, found the answers the investors were seeking (see the sidebar “Why a Seasoned Marina Builder Promotes Precast”). As the project’s designer and superintendent, Martin knew he needed a structural system that could be built during Idaho’s harsh winters and provide needed environmental protection mandated by the Idaho DNR.

Winter construction

Alternative materials for the marina were considered by the owners and the project superintendent. Winter-time construction would not be practical using a cast-in-place concrete system. With a cast-in-place concrete design, pumping and shoring formwork would be required as well as protective tenting and heat to protect the concrete during coldweather curing. More importantly, heavy ready-mixed concrete trucks were not permitted to travel on the local roads during the winter due to the damage they might cause during seasonal freeze-thaw cycles.

Martin knew that precast concrete could be erected during cold weather and could be fabricated to look like natural stone in retaining wall and breakwater systems. Not only would precast concrete be more versatile for the site conditions, but the cost of precast was equivalent to a cast-in-place alternative, because precast did not require labor-intensive shoring and formwork construction. The selection of precast architectural and finish designs would also meet the owners’ demands for an aesthetically pleasing facility. Talking with fabricators at Wilbert Precast Inc. in Spokane, Wash., would be Martin’s next step.

Precast system

Wilbert Precast provides a wide variety of precast

concrete products to the northwestern states. The precaster and project superintendent knew the first task was to design precast retaining walls to be built throughout the entire marina. Redi-Rock seemed to make the most sense for the project, because it offers a very natural stone finish, and the system has proven to withstand the constant battering of waves in marine conditions. Beyond Hope’s owners wanted the stone walls to run continuously on both sides of the marina and extend out into the lake. The solution was to create large precast panels using liners that would give the appearance of stone walls running seamlessly into the water.

In order to support the precast panels, the contractor drove large H-pile beams vertically into the lake bed at intervals of about 12 feet. The precast panels were manufactured with a smooth picture-frame look on the edges so they would fit firmly against the steel H-beams. The maximum height of the jetty wall is 9 feet tall, and it appears to diminish in height as it runs out into the lake. To save time and money, the precaster manufactured smooth panels for some of the lower walls; this portion of the wall would not be visible during the high water of the summer months. Precast panels were erected in front of the existing log walls to minimize site disruption and adverse environmental effects to the lake bottom and to water quality.

Wilbert Precast manufactured precast concrete docks with 96 sections up to 20 feet long each. The precast dock concrete is 3-feet 5-inches wide, with treated timber on both sides, for an overall dock width of 4 feet. Darin Swan of Wilbert Precast’s design and sales in Spokane discussed the high-flow, self-consolidating concrete mix design used in the marina project as well as some of the production challenges.

“We made over 2,200 retaining wall blocks for this project,” said Swan. Wilbert Precast’s Spokane facility produced about 60 blocks and six wall panels per day as well as custom precast components for the project. The precast shoreline protection panels are designed to work as an extension of the retaining walls and serve as both breakwaters and as an aesthetically appealing entrance to the marina. In fact, the transition between the structural precast and the nonstructural wall panels is difficult to see. The rounded precast concrete docks were fabricated as a specialty item to meet the owners’ specifications for a more elegant marine facility.

A one-half inch nylon insert was imbedded in the

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side of the docks so the wood could be attached to the concrete and not allow ingress of water that could cause potential corrosion. The dock sides support white rubber liners to protect the boats while moored.

Project investors wanted to create a different and more unique appearance than that of a traditional squared-off dock, so the docks were designed with rounded-off corners. The rounded ends create a remarkably improved aesthetic for the marina and also make it easier to navigate for boaters approaching the slips.

The precast docks were manufactured with steel imbeds in the bottom that are welded to the top of round pilings. The permanent steel pilings support the docks above the water year-round so the structures are protected from potential ice damage during the long, cold Idaho winters. Three people from Wilbert Precast were present at the site during the construction of the precast concrete retaining walls to ensure a quality installation.

Challenges

Wilbert Precast's production facilities are located about 90 miles southeast of Hope, Idaho. The biggest challenge for the precaster was production and transport of the marina's docks. Wilbert Precast produced the dock panels in the middle of winter when the floors of the manufacturing facility were cold. As the panels are only 6 inches thick, they required 48 hours of cure time before they gained sufficient strength so that they could be moved without the potential for stress cracks.

Transporting the panels without damage was another hurdle. Paul Pecoraro, Wilbert Precast's production manager, came up with the idea to truck the panels with large sections of Styrofoam layered between the panels. Most precast facilities use Styrofoam for blockouts, so it was an inexpensive solution that allowed the panels to withstand the jostling motion from road conditions during the circuitous trip (about two hours travel time one-way). All of the dock panels have a simple radius edge with a broom finish on the surface. During production, Wilbert Precast used the same broom and edger on all the panels to ensure consistency. As a marine contractor with considerable experience, Dana Martin knows that the most critical and challenging aspect to any retaining wall project is to ensure proper soil drainage and an absolutely level installation of the base course. Adequate drainage of upland soils behind the

retaining wall is critical to the function of the entire system. More than 4 million pounds of precast block were delivered to the site. About 90 truckloads of precast retaining wall blocks were shipped from Spokane to the construction site near Hope.

Satisfied owner defines project goals

"We were looking for an elegant residential look for the new marina," said project developer Rick Auletta. "Our plans for the Beyond Hope Marina were very different from those at our busy service marina located a short distance away." At a service marina, facilities tend to have a more functional appearance, where boaters can pump gas and obtain motor repair services. "What we wanted to accomplish at Beyond Hope was to create a less commercial appearance than that of a typical service marina," Auletta added. "As we plan to develop the site for townhouses and single-family homes in the future, it was important that the new marina have an upscale restraint and an appropriate aesthetic that would appeal to a discerning residential market." The round corner docks were a big hit with marina developers, according to Auletta. "The rounded corners on the precast docks really help to soften the functional look typical of most marinas, and the design also facilitates docking maneuvers.

The lush grass walkways work well in contrast with the vertical stone relief of the precast retaining walls." The precast concrete marina is well-suited to the approximately \$1.5 million development planned for the site.

The Beyond Hope Marina project was started in December 2007 and completed in time for the summer season in 2008. The new precast marine facility is expected to provide many years of enjoyment and maintenance-free service.

Sidebar: Why Seasoned Mariana Builder Promotes Precast

"I've been a marina builder for over 25 years," said Dana Martin, project superintendent of the Beyond Hope Marina development. Martin has built and supervised projects that range from floating houseboats in Seattle to an AIA-award-winning marina in Stanley, Idaho, as well as designing many other projects for marine applications.

"My brother-in-law has a place on Flathead Lake in Montana, and he built a spectacular-looking seawall using a precast concrete locking block system," he said. "I knew the kind of look the devel-

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opers wanted for the Beyond Hope boat basin and I proposed the idea of using Redi-Rock walls and fixed precast concrete docks.” So he contacted Wilbert Precast to discuss the project. Precast provided the opportunity to complete the project during the winter months when the lake level is down.

“We started earthwork in late December and finished the project in early June, unloading and installing about five to 10 sections per day,” Martin said. “We could not have worked during winter conditions using a cast-in-place product. The marina developers wanted to take what was essentially a run-of-the-mill resort and transition the site into a high-end marina that would fit in with future development plans for the site.”

Sidebar: Retaining Wall Systems

Precast concrete manufacturers located throughout North America produce a wide range of engineered earth retaining systems designed to provide a straight forward and cost-effective solution for your next project.

Issues with wall height, right-of-way, seismic activity, drainage, quality control and aesthetics can all be overcome by specifying the use of a precast concrete earth retaining system.

There are numerous proprietary systems available which include precast concrete mechanically stabilized earth (MSE) face panels and large precast modular blocks (PMB). Precast concrete cantilever walls, crib walls and post-and-panel systems are also readily available from many local precast concrete manufacturers. Products include: commercial retaining walls, residential retaining walls, sea walls, mechanically stabilized earth (MSE) panels, modular block systems, segmental retaining wall (SRW) products and other retaining walls.

To find a retaining wall producer in your area, visit www.precast.org. There you’ll find precast manufacturers in your region that will be able to speak with you about your project, help with design issues and provide the solutions you need in order to move forward.