

Engineering feats exemplify '90s construction

A bridge too far...

World's 2nd and 3rd stressed-ribbon structures installed at Calif. track

By MARK LESLIE

RANCHO SANTA FE, Calif. — To a man who builds \$60-million freeway bridges, work on the new golf course at The Bridges at Rancho Santa Fe here was "the most unique project we've ever done."

FCI Constructors of San Diego built two 285-foot "stressed-ribbon" bridges over a canyon to access several holes of the Robert Trent Jones II-designed course.

"We usually build \$20-million to \$60-million bridges, but we saw this [call for bids] and thought it would be interesting," said project manager Tom Cameron. "It was. They are the first ribbon-type bridges we've built. It's new technology."

In fact, only one other bridge, that which crosses the Sacramento River in Redding, has been built with this technology.

The stressed-ribbon technology was chosen, according to course superintendent Mike Hathaway, because of environmental conditions — to avoid habitat mitigation.

"It allows you to avoid the canyons altogether," Cameron explained. "Normally when you build a bridge you build false work up from the ground (poles and bracing, etc.) to support the concrete until you pour it and brace it and it can support itself. In this case that was not necessary because of the cables..."

"We built abutments that are anchored into the rock on each edge of the canyon, and then strung



An FCI Constructors crew works on a stressed-ribbon bridge at The Bridges.

You have to have rock at either end for this procedure. If not, you could put a load in the middle and it might pop out of the ground. There is tremendous uplift force to support the bridge.'

— Tom Cameron, project manager
FCI Constructors

cables between the abutments," Cameron added. "Then we suspended 10- by 13-foot x-slabs from the cables. They are concreted together and stressed a second time... All the work is done from the ends."

At each end of the bridge where the abutments are located, 12 shafts were rock-drilled into the canyon and rock anchors were sunk at various angles down 70 feet into rock.

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And a beach too short

Daufuskie Island Club's 3-1/2 miles of beachfront gets 'renourished'

By MARK LESLIE

DAUFUSKIE ISLAND/HILTON HEAD ISLAND, S.C. — Using supercharged equipment and 5-foot-diameter pipes that ran along the ocean floor, contractors have "renourished" 3-1/2 miles of beach at Daufuskie Island Club & Resort in a \$6-million project here.

Setting up oil rig-like gear 2-1/2 miles offshore at Barret Shoals, Great Lakes Dredge and Dock Co. of Illinois dredged up and pumped more than 1.4 million cubic yards of sand along the beach. Bulldozers spread the new sand from the beachfront 50 to 200 yards out into the ocean.

With the additional sand, the tides no longer reach, and threaten, the bulkheads that run along the 17th and 18th holes of Daufuskie Island Club's Jack Nicklaus-designed Melrose Course and for a half mile to the beach club. And the salt water no longer sprays onto those fairways, making turf maintenance difficult.

Natural erosion had severely depleted the beaches at the resort. Resort management worked with U.S. Fish and Wildlife Service and South Carolina Department of Natural Resources officials to plan the project. It was delayed at one point last year until a nest of osprey chicks had fledged.

"The company feels strongly that it is our responsibility to protect the wildlife and environment that make Daufuskie Island unique," Club Resorts

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GUEST COMMENTARY

Building's progress huge in last decade

By BILL KUBLY

"High velocity" best defines the vast changes that have occurred in the golf course construction industry over the past 10 years.

The game of golf is healthy. Its popularity throughout the media continues to reach more new viewers. The economy is making it possible for investors to direct dollars to the golf industry confident in successful returns on their investments. These factors have driven the demand for new golf facilities and the restoration of existing ones. Golf course contractors across America have been, and are constantly looking for the best methods to meet the demand.

With demand comes the need for contractors capable of delivering a product that meets the high expectations of a game rich in tradition, and a philosophy

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Bill Kubly

Bill Kubly is president of Landscapes Unlimited in Lincoln, Neb., and of the Golf Course Builders Association of America, headquartered in Chapel Hill, N.C.

Some course architects adding construction to portfolios

By PETER BLAIS

Golf course architects are becoming increasingly involved with the actual construction of their designs.

Offering limited construction services — usually shaping and related finish work — provides architects both extra revenue and additional control over the completed product.

Among the more active architects/builders are Roger Rulewich, Bob Lohmann, Denis Griffiths, Craig Schreiner, Tom Fazio, Rees Jones, and Robert Trent Jones Jr. Following is a brief look at three of those construction firms.

ROGER RULEWICH

The Roger Rulewich Group in Bernardston, Mass., has done finishing and feature work since the mid-1990s.

"We're not golf course contractors like a [Wadsworth Golf Construction] or Landscapes Unlimited or any of the major golf course builders," Rulewich said. "We specialize in shaping, grading and, at times, putting in materials and drainage. We finish greens, tees and bunkers and sometimes do the grassing. But we don't handle the major

earthwork, major drainage and irrigation, and most often not the final grassing.

"The shaping is so important and integral to the design that we offer to combine those services with our design. We've gotten to the point that if people want us to do the design without the shaping, we're not interested...We give our clients a price for design and shaping right up front."

Rulewich said his design/shaping requirement excludes the firm from many municipal jobs, which usually require those services go out to bid. "We find we don't work with golf course contractors, either, because taking the shaping out of it isn't of much interest to them," Rulewich said. "We usually end up working with local earth-moving contractors, people who do clearing and drainage work. Our jobs usually are a combination of other contractors along with our own people."

Despite warnings from fellow architects that requiring developers to use his construction company might scare away business, Rulewich said: "I found it to be an easy sell."

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GUEST COMMENTARY

Designers exceeding letter and spirit of regs

By BILL LOVE

Golf course architects, builders and superintendents certainly have intensified their effort in recent years to develop and maintain golf courses in concert with Mother Nature. In some ways, the regulatory process has progressed in a similar pattern, becoming much more sensitive to complex local and national issues.

However, in certain areas the process could be streamlined for the benefit of both regulators and developers. The ability to develop layouts in a way that balances environmental, economic and design concerns has become the norm rather than the exception.

Earlier this year, the Environmental Committee of the American Society of Golf Course Architects (ASGCA) updated "An Environmental Approach to Golf Course Development." First published

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Bill Love

Bill Love is chairman of the Environmental Committee of the American Society of Golf Course Architects.

\$6M renews beach

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Senior Vice President of Project Developments George Blonsky said at the time. "We will continue to work with representatives from USFWS and SCDNR to monitor the progress of the osprey as well as other wildlife concerns like the tea turtles."

Great Lakes Dredge and Dock's restoration project, overseen by Applied Technology and Management Inc. of Mt. Pleasant, S.C., was an amazing process and a pretty satisfying accomplishment," said Blonsky. "First, you had to see Daufuskie Island without its beaches, the ocean eroding into the actual headlands, live oak trees falling into the ocean — even a couple of houses had fallen down on the beach."

The huge pipeline, hooked up in 30-foot links, sometimes ran 200 feet under the ocean. On the barge, three full-sized locomotive engines pushed the sand toward the beach. A mile from the beach, a booster pump kicked in.

When the sand reached the beach, it literally flew out of the pipe, according to Vice President of Sales and Marketing Jack Bickart.

Three hundred-yard stretches of beach were renourished at a time until the entire 3-1/2 miles was restored in this project that took 60 days to complete, working 24 hours a day.

"To me, the most amazing fact was the commitment of \$6 million by ClubCorp to pay for this," said Blonsky. "If they had not paid for this private project, none of this would have happened."

The beach project was part of a \$22-million capital improvement campaign by owner Club Resorts that also included \$1 million in renovations at the Melrose course and the Tom Weiskopf/Jay Morrish-designed Bloody Point Course.

Bunkers were refurbished and a two-row irrigation



The par-5 18th hole on the Melrose Course at Daufuskie Island Club & Resort was threatened by beach erosion (right) before a "renourishment" project returned 1.4 million cubic yards of sand to the beach, which extends 3-1/2 miles.

system and cart paths were installed on the Melrose Course. New cart barns were built for both courses, and Bloody Point received a new maintenance building and clubhouse.

Bridges a major feat

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"You have to have rock at either end for this procedure," Cameron said. "If not, you could put a load in the middle and it might pop out of the ground. There is tremendous uplift force to support the bridge."

The new bridge allows 18,000 pounds per axle, and Cameron said his company drove a 3-ton backhoe and other equipment over the span.

Construction consumed eight months, including two months of pre-construction work and two months of finish work, like pouring a half-inch of polyester concrete with aggregate over the bridgewalk.

Landscapes Unlimited President Bill Kubly, whose firm built the course, was thankful for the bridges, because without them, he would not have been able to build several holes on the far side of the canyon.

"The only way to finish those holes was to get water there to irrigate them," Kubly said. "That is one of the most dramatic sites you'll see for a golf course. Wonderful bunkers and golf holes. It has an opportunity to be one of the best new courses of the year and one of the best for years to come."

The course had a soft opening Oct. 9. A gated community and private course, The Bridges at Rancho Santa Fe encompasses more than 550 acres of rolling hills, deep canyons, creeks and natural vegetation.

The project started a decade back, but came to a halt eight years ago. After two changes in ownership, construction began again under the eye of Lennar Communities, the second-largest home builder in the country.

Architects exceeding letter, spirit of regs

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in 1992, this booklet introduces town councils, permitting boards and other regulatory committees to the environmental issues and process inherent to golf course design and construction.

Education and communication are still the best methods to efficiently create and implement a development process that satisfies the needs and concerns of both developers and regulatory groups. Most ASGCA members would probably agree that progress toward this end should include developing dialogue to recognize important local and regional issues.

In an effort to initiate this dialogue, the ASGCA has teamed with officials at the Environmental Protection Agency (EPA). In the last few months, they have collaborated to distribute more than 500 copies of "An Environmental Approach to Golf Course Development" within the EPA organization. Activities such as these indicate a commitment to open communication.

Regulations, by definition, set the environmental parameters concerning the environmental issues and land development of a site. In order for regulations to be effective they should welcome input concerning their application and effectiveness.

First, more quantification on the environmental characteristics involved would contribute to better design solutions. For instance, a non-functioning, manmade wetland abandoned years ago may carry the exact same restrictions as a naturally occurring wetland. How can different levels of environmental settings be delineated in an appropriate manner?

Second, the regulatory process should involve more people familiar, if not well versed, in golf course development. This would create a situation in which innovative solutions are discussed with the hope of attaining a more environmentally beneficial goal.

Innovative design solutions may not always exactly match the rigidity of regulations. However, upon closer examination,

they may still exceed them in spirit, creating a better method of development.

The golf industry continues to keep the environment top of mind through research, communication and education. Golf course architects are striving to embrace the environmental issues involved in golf course development.

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The 48-page "An Environmental Approach to Golf Course Development" can be obtained by sending a check payable to the ASGCA for \$10 (per copy) to the following address: American Society of Golf Course Architects, 221 N. LaSalle St., Chicago, IL 60601. Valuable information is also available on line at the ASGCA Web site <http://www.golfdesign.org>.



SKILLFUL, ENVIRONMENTALLY SENSITIVE

The par-4 16th hole at Arthur Hills-designed Bona Bay (Fla.) Golf Club is a prime example of skillfully laying out a golf course in an environmentally sensitive area.