

# 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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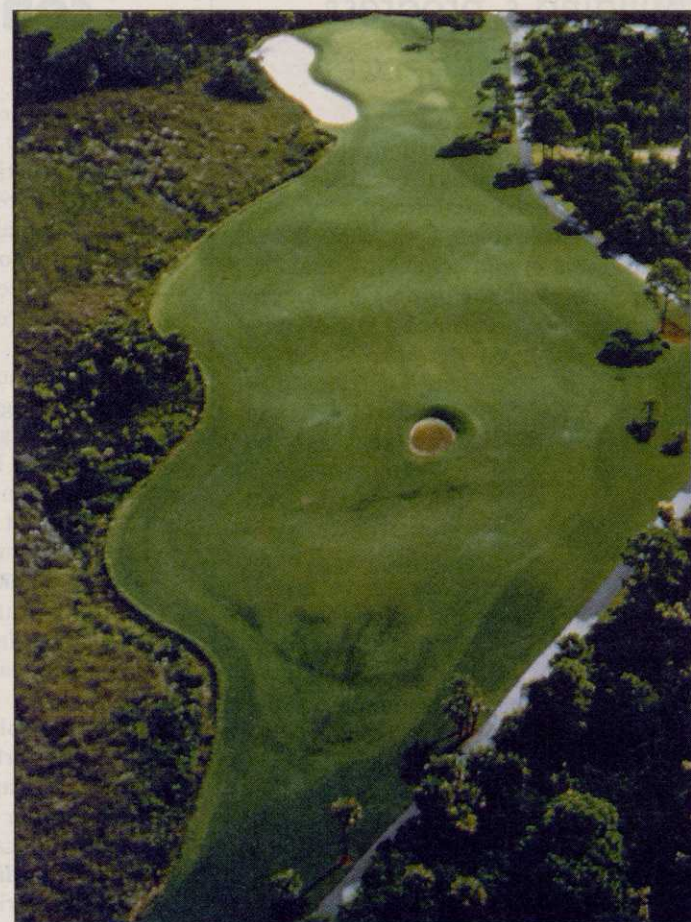
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### NEW 'ENVIRONMENTAL APPROACH' BOOKLET AVAILABLE

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.



## Kubly comment

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that is very exacting in its effort to maintain the integrity that has survived the test of time.

If volume is an indication of change, the growth of new golf course contractors in the last decade attests to that fact. In 1989, there were approximately 40 members of the Golf Course Builders Association of America (GCBA). Unlike today, the level of requirements and certification in 1989 was in its infancy, with much work to be done. Today, there are

236 GCBA members, including:

- 26 Certified Builders — members who have met the requirements established by the GCBA through its Professional Certification Program, which has become the standard by which all golf course builders are judged. The purpose of the Certification Program is to identify competent and experienced golf course builders and ensure uniform quality standards in the industry.

- 27 General Contractors.

- 185 Associate Members — new contractors, manufacturers, suppliers and subcontractors.

The budget necessary to facilitate the GCBA has risen twentyfold in these last 10 years. With 42 companies joining in 1999 alone, change will be ever-present in the days and years to come.

If GCBA members expect to succeed, they must look at the change of the past 10 years, take a positive approach with what they have learned, and factor this into today's planning. The demand for players to choose one course over another requires golf course investors and owners to provide the best of the best. Investors and owners are looking for a return today, not tomorrow. Because of this mentality,

today's contractor is expected to meet the demands of today's client. These expectations include:

- Time Schedules. Opening day of every golf course is critical. Today's contractor is given less time to do more, and must accomplish this feat within a schedule that allows the investor to generate revenues on opening day. Failure to deliver can be very damaging to all involved.

- Complexity of scope of work. In the effort to provide golfers with the best, contractors must be significantly more qualified than 10 years ago. Contractors must be able to deliver:

- ✓ bigger and better waterfalls.
- ✓ more lake construction.
- ✓ more elaborate rock and water features.

- ✓ wall-to-wall sod applications.
- ✓ the ability to move massive amounts of dirt.

- ✓ highly sophisticated irrigation systems.
- ✓ elaborate drainage capabilities.

- Equipment. Clients today are much more knowledgeable than clients of the late 1980s. Today they are aware of what it takes to deliver on the contractor's promise. Construction demands state-of-the-art equipment. Time is money, and failure to supply every project with the correct equipment will cost the contractor time and, ultimately, his ability to run a business.

- Technology. With the birth of the computer and other high-tech capabilities, each contractor must be well informed about what will lead the industry into Y2K. The internet has given contractors the ability to deliver on the latest in communication services. Unlike the late 1980s, the team of owner, developer, architect and contractor can now communicate with the speed and accuracy never before thought possible. Job scheduling, tracking and documentation help all key team members to manage each project day to day.

- Safety. Longer days, faster schedules and more equipment all test the human realities on every project. Keeping employees safe must remain the industry's No. 1 priority. Training each employee to understand the value of a safe working environment is just as important now as in the past. The change that must occur today is the discipline to make safety a priority in each employee's activity. Contractors must walk the walk, and provide a safe environment for their most valuable resource.

All of this being a given, the Y2K contractor must be prepared to deliver, regardless of the weather, a rocky site, multiple owners all demanding their own agenda, and, most importantly, doing all the above in a professional manner.

The last 10 years have been the ride of a lifetime for everyone in the industry. We have learned first-hand that in order to meet the demands of the golfing public, we must continue to learn from yesterday's experience, and be willing to change as we approach every tomorrow.

Failure to meet change head-on will ultimately diminish the quality of the product we deliver. Lack of quality will cause today's golfer to consider alternative forms of recreation. The game is too important not to do whatever it takes to secure its future.

The Y2K contractor plays a key role in the evolution of every golf course. Every contractor must remain committed to learning from the 1990s and keeping the game alive for all who want to experience its true meaning in the future. ▶

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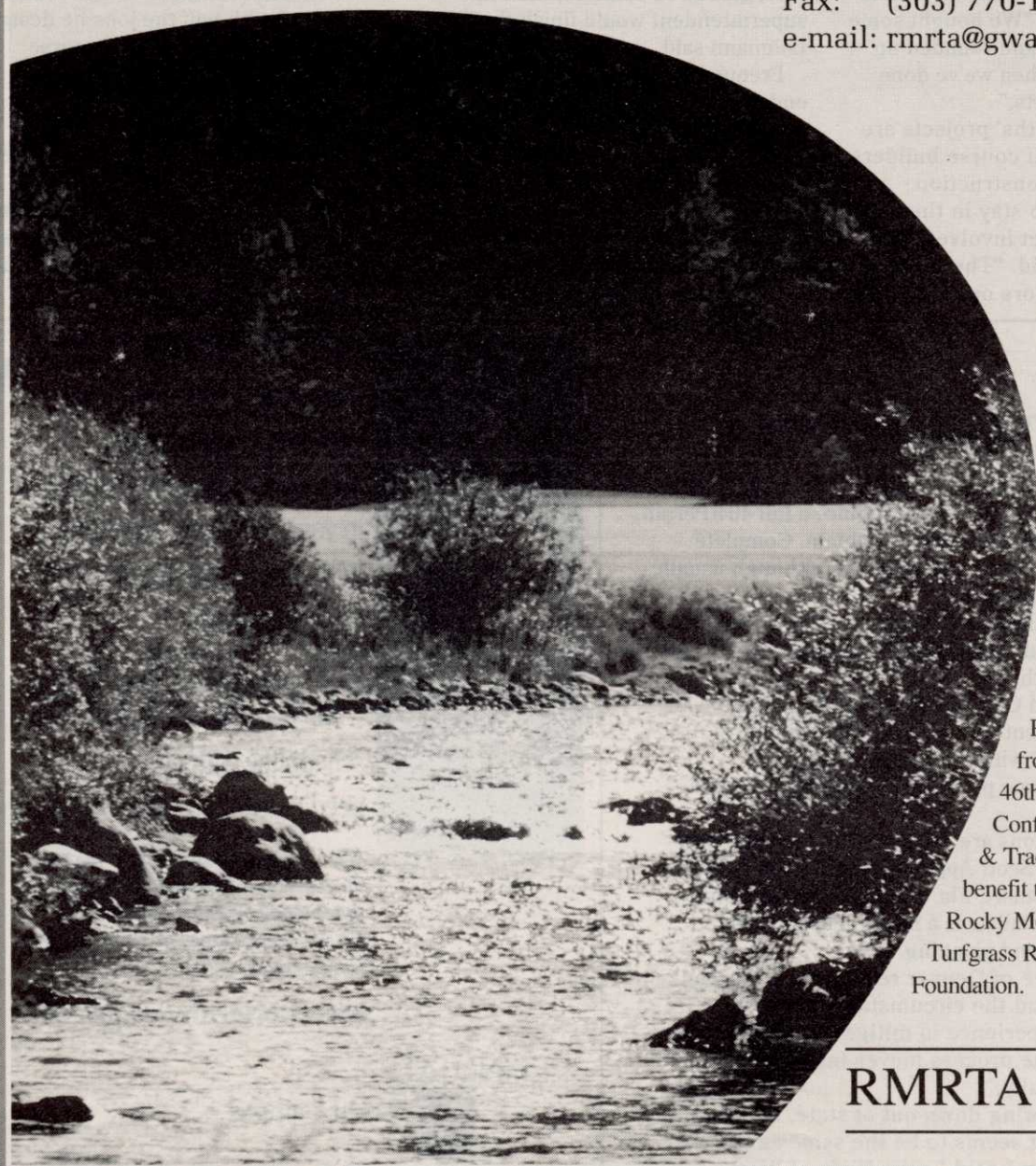
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