

Strengthening Command and Control

A 22-year old irrigation system at Riviera CC made it difficult to water the golf course efficiently. An upgraded control system put the superintendent back in charge

BY FRANK H. ANDORKA JR., MANAGING EDITOR

Matt Morton, superintendent at The Riviera CC in Pacific Palisades, Calif., is not a control freak, but he wanted to control his irrigation system. Unfortunately, the 22-year-old system didn't have a central control system. It would take guts to start an upgrade of the irrigation control system ahead of the course's premier event in February 2002, but it had to be done.

"We had fallen at least two generations behind with our controllers, and it was really difficult to irrigate the course in a timely fashion," Morton says. "We definitely needed to do something because the system was prehistoric."

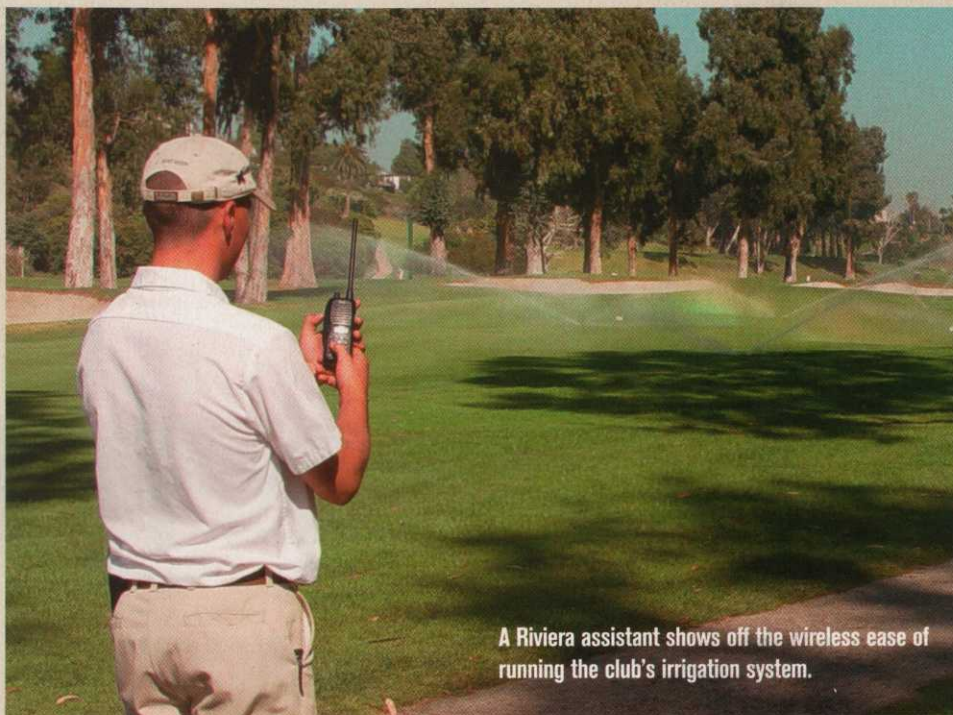
With so many possibilities for upgrades, however, Riviera's decision-makers didn't want to rush to make a choice. So they bided their time during the summer of

Problem

Without a central control system, Riviera's older irrigation system (circa 1979) didn't allow the superintendent to change the watering schedule easily. The 90 satellites didn't communicate, so each station had to be changed manually.

Solution

Installing a Signature control system gave superintendent Matt Morton the ability to change the entire program from any satellite or central mainframe. It shortened the water window and gave him more control over his system.



A Riviera assistant shows off the wireless ease of running the club's irrigation system.

PHOTOS BY MATT MORTON

2001 and tested a variety of products. But they also had to be careful because it rarely rains from March through December in Southern California. "You have to be good at water management, and our old system didn't allow us to be as good as we wanted to be," Morton says.

The problem

The system that irrigated Riviera's historic fairways and greens was installed in 1979, at a time in irrigation technology when central control systems were few and far between. As a result, when Riviera's irrigation technicians wanted to update the irrigation program, they had to travel around to the course's 90 satellite stations (which control nearly 4,000 heads) and change them individually.

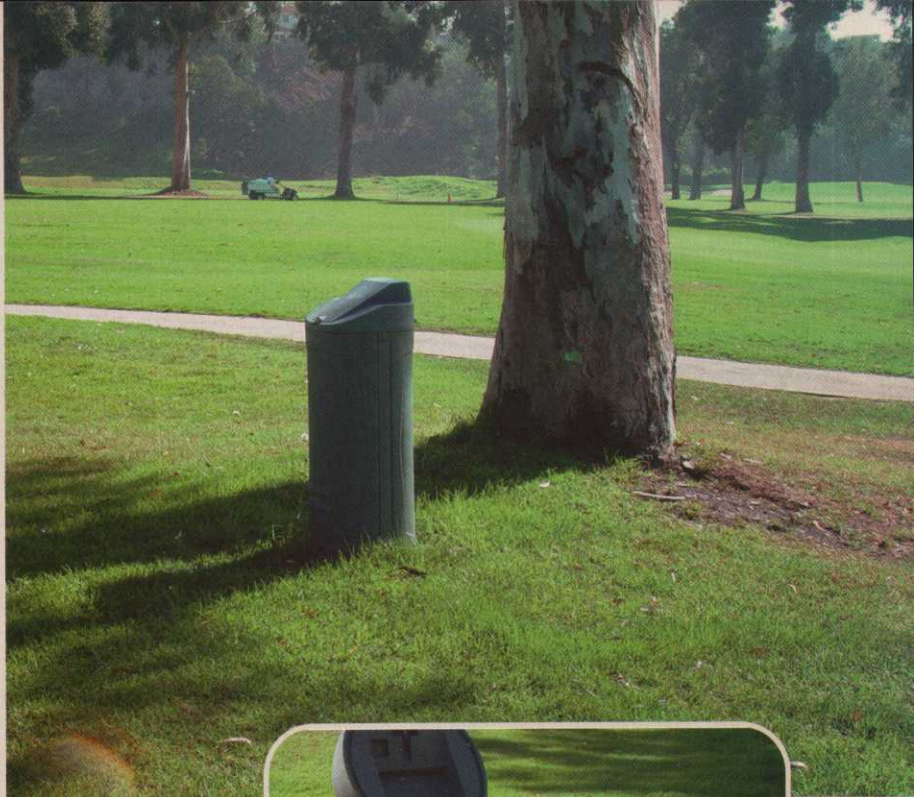
"There was no way to do it efficiently," says Morton, who was an assistant to then superintendent Paul Ramina at the time. "We'd send our irrigation technicians out to make changes, and it would take them a long time to get around the course. That was a waste of man hours we could have used on other projects if we'd just been able to update the system from a central location. We had to become more efficient."

In addition, while modern irrigation systems allow superintendents to control individual sprinkler heads to ensure consistent coverage, Riviera's system didn't. "It was kind of crazy," Morton says.

When word leaked out that Riviera was contemplating an irrigation upgrade, Ramina was besieged with irrigation companies who wanted to provide the hardware and software, Morton says. Each company provided test controllers for Ramina and Morton to try before they made a final decision. After months of looking at different systems, Ramina decided on one. Then he received a call from a Signature Controls representative. "They didn't have much exposure out here on the West Coast," Morton says.

Curt Schaubel, sales director for Signature Control Systems, says the company hadn't provided its systems to a top 100 course in the West, so the opportunity to help Riviera with its problems was too good to pass up.

"We felt our system could address all of



their concerns by allowing the superintendent to control any sprinkler head from any individual satellite on the course," Schaubel says.

The solution

After testing Signature's products for a few weeks, Ramina was so impressed that he changed his mind and decided to go with its control system.

"We thought the central control system that Signature offered was terrific," Morton says. "It was an enormous improvement over what we had. We can have fun and get creative with the new controllers."

Morton says Ramina also liked the fact that the new satellite systems could be upgraded easily so the course didn't need to exchange hardware anymore. "New changes in software are downloaded in a matter of seconds, just like you would do at your home or office PC," Morton says.

The next challenge was deciding when to do the upgrade. As Ramina and Morton looked at the calendar, they realized the only logical time to make the change was in December 2001. In Southern California, golf courses get the most rain during that time, so it's the perfect time to make alter-



The new Signature satellites (above) easily took the place of the older outdated system. Riviera's crew members ripped out the old system and rewired the new one once it was installed (below).

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Real Life Solutions: Riviera CC

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ations to an irrigation system because the rain will take care of watering the turf while the system is out of commission, Morton says.

But there was another potential snag that had nothing to do with the weather: The course had only six weeks to complete the work and get out of the way before the Nissan Open rolled into town.

"There are some people who would say that it took a lot of courage to alter your irrigation system six weeks before a major tournament," Morton says. "But we couldn't afford to make the changes during the summer because you'd risk turf loss. We just had to make sure everything went as smoothly as possible."

Fortunately, the satellite replacement proved to be fairly easy, Morton says. It only took one week.

"Our staff ripped out the old sys-

tem, leaving only the concrete pedestals and wiring," Morton says. "The Signature team installed the new satellites, and we rewired them."

But weren't they worried that something might go wrong before the tournament?

"We had complete confidence in the system," Morton says. "Our biggest concern was that the learning curve for our irrigation technicians might be too steep. But it's an instinctual system, so it was easy to train them. We had a successful PGA event, and the controllers performed beautifully."

Outlook

What impresses Morton most about the system is the direction the Signature team members are heading. "They have taken a step toward the future in their design, and I respect the fact that they directly implement

changes to the software from superintendents' negative and positive feedback," he says.

Morton says the course conditioning improved as he gained better control over the irrigation system. The golfers noticed, particularly in the heat of last summer.

"We had an extremely difficult summer — one of the driest years to date — and we came out above and beyond expectations," Morton says. "We received more compliments from the golfers than I can remember."

Morton is also happy that he won't have to worry about a major overhaul of the controllers when the club replaces its entire system from the ground up in two years.

"We're looking forward to 2005," Morton says. "With new piping and a flexible control system, we expect to have one of the best overall irrigation systems in the industry." ■

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■ HOW TO BUILD A COURSE ON MINE SHAFTS

Mining for Golf

Builders faced a “hole” lot of challenges while constructing Stewart Creek, a new course located on top of old mine shafts in the Canadian Rundle Range

BY ANDREW PENNER

The beautiful mountain town of Canmore, Alberta, was originally known for coal mining. Beginning in 1886, thousands of miners kissed their loved ones goodbye and disappeared into the bowels of the earth for up to 12 torturous hours at a time. Of course, with the inherent dangers of underground coal mining, some of them would go down and never see the light of day again.

Since the mines closed in 1979, another use was found for the land. Now, on the eastern slopes of the Rundle Range near Can-

more (a 15-minute drive from Banff), a spectacular new golf course called Stewart Creek parades overtop of many of these long forgotten mine shafts. Fortunately, nobody lost his life while constructing the course. However, with numerous mine shafts still crisscrossing the terrain, construction crews were faced with difficult challenges as they built the course.

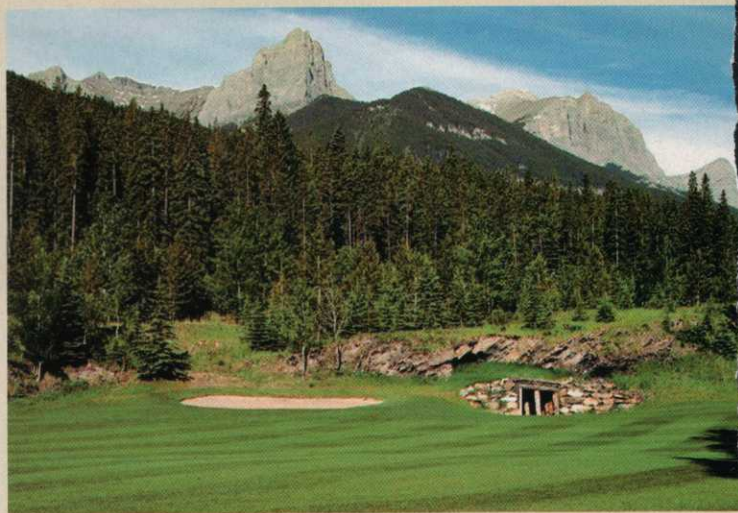
Designed by Alberta architect Gary Browning, Stewart Creek has quickly become recognized as one of Canada’s premier mountain golf destinations. A runner-up finish in *Golf Digest’s* “Best New Canadian Course” category last year hasn’t hurt either. While some of the game’s finest connoisseurs are taking notice (and players with a zest for high-altitude golf are filling the tee sheets), constructing the course didn’t come easy — or without a hefty price. According to Browning, Stewart Creek was forced to spend an estimated \$300,000 on reinforcing fairways that potentially could have collapsed or sunk due to the old mine shafts that are located under the course.

Problem

How do you build two fairways that are located on tunnels that were formerly part of a coal mine? The glib answer is “very carefully,” but there’s more to it than that.

Solution

Bring in the geo fabric, which was used as underlay to strengthen the ground on the two fairways. The geo fabric shows “amazing strength” when woven together as a textile.



Stewart Creek incorporates a number of refurbished mine entrances that add authenticity to the course’s setting. The openings make great rain shelters.

Interestingly, the final 18-hole product at Stewart Creek incorporates a number of refurbished mine entrances that add some authenticity to the course’s setting. Although golfers can enter no further than 15 feet or so into the mines (upon which the tunnels are barricaded with steel grates), the openings have been reconstructed with new timber and serve as excellent rain shelters.

However, the mine entrances were the least of the worries for construction crews. With more than 50 miles of tunnels under the course, the greatest worry, according to an Alberta provincial safety board, was centered on reinforcing fairways that, with substantial rainfall or constant pressure from golf carts, could sink and endanger the public.

Enter 120,000 square feet of a geo fabric (or geo grid), which was used as

underlay to strengthen the ground on two of the fairways that posed the greatest risk. The geo fabric is extremely strong. Interestingly enough, it’s similar to what is used to keep ski racers on the course after a spill. (Yes, that would be the orange fences that line the World Cup downhill courses.)

“You could cut the fabric with a knife, but it holds amazing strength when woven together as a textile,” Browning says. “Its tensile strength is unbelievable.”

The theory behind it, of course, is that if ground underneath the fabric settles, the people on top will be protected by the grid and the ground should remain solid. “Hypothetically, you could have portions of a golf hole that are actually suspended by the fabric, with nothing but hollow ground underneath,” says Al Draper of Evans Golf

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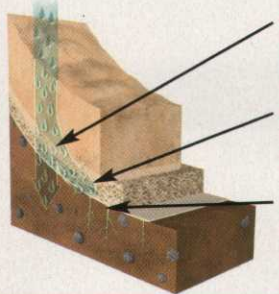
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Course Construction and the project manager for the work done at Stewart Creek.

“The areas of most concern were on fairways No. 2 and No. 4,” cites Draper. “Consequently, those were the two fairways where we needed to install the geo fabric.”

The second hole (a par 5 nearing 600 yards) and the fourth hole (a par 4 nearly 480 yards) were completely lined with the tensor-like fabric. In fact, the second hole features four layers of the fabric, while the fourth hole has two separate layers.

Understandably, what made the process difficult for the workers was not the installation, but the excavation which was the first step. In order for crews to have enough room for the soil to house irrigation heads, pipes and cable, the ground had to be excavated a meter in depth.

“Being in the Canadian Rockies, we hit plenty of rock,” Draper recalls. “In some areas, it simply wasn't possible to get down a meter so we built areas up instead, adding enough soil on top of the fabric to have sufficient room for the irrigation and to ensure the fabric went taut.”

As ironic as it seems, heavy equipment was needed for the excavation to occur.

“At times, it didn't seem logical,” Browning says. “Here we were going through this major process for public safety, in lieu of possible settlement, and

tons of heavy equipment was constantly at work above these sensitive areas.”

Naturally, the process was a measure required by the government of Alberta through a specially assembled board of safety officials that no longer exists.

Bringing their own first-hand expertise to the site was a number of mine engineers who assisted Draper at Stewart Creek. “The engi-

If ground underneath the fabric settles, the people on top will be protected by the grid and the ground should remain solid.

neers were helpful in determining the configurations of the tunnels, providing old mining maps, gauging the strength of the various shafts and entranceways, outlining steps necessary for the restorative work and for overall safety,” Draper says.

Understandably, no current maps existed on “the underworld,” so “first-hand knowledge from engineers who were familiar with the mine workings was crucial,” Draper adds.

After excavation, the fab-

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ric, which came in rolls 15 feet wide, was simply laid overtop the exposed rock and soil. From there, the irrigation was placed on top of the fabric and covered with the removed soil and a mixture that was prepared nearby. As an added challenge, there was no soil readily available.

Fortunately, a layer of peat was discovered on one of the natural plateaus on the course. Also, silt deposited close to Stewart Creek was available for use. Draper combined both entities to form an appropriate growing medium.

Because the region had been so heavily used in coal



PHOTO COURTESY OF STEWART CREEK

Stewart Creek has quickly become recognized as one of Canada's premier mountain golf destinations.

mining, there were additional concerns regarding past mining activity. "There were areas that we simply had to stay away from when routing the course," Browning says.

A constant reminder, and an area that is strictly out of bounds for the maintenance team and the golfers alike, is readily seen beside the 10th fairway. A gaping open pit mine is

just yards off the fairway and signs warn anyone who ventures too close.

"The area is environmentally sensitive as the elk and sheep are drawn to the naturally forming salt and mineral deposits in the mine," says superintendent Sean Kjemhus. "The area is simply off limits."

With coal a relatively low-in-demand resource, it's

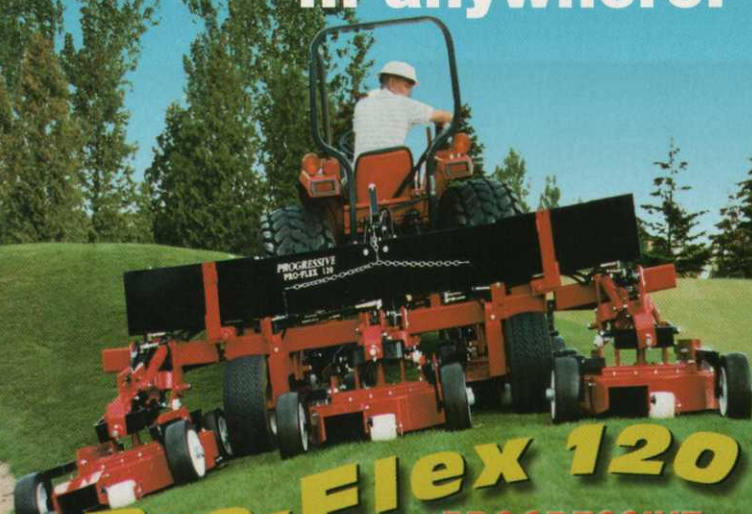
not likely the tunnels under the course will ever be illuminated by a miner's headlamp again. Today, the black coal-lined tunnels have been replaced with lush green networks of Kentucky bluegrass — a sign of the times. In addition, the local miners have exchanged their pick axes for golf clubs.

As for Sean Kjemhus and his maintenance team, they get up early in the morning and kiss their loved ones goodbye. And with the smell of coal still in the air, they put on their hard hats and venture into dangerous terrain. ■

Penner is a free-lance writer from Calgary, Alberta.

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