

A LITTLE SUMMER PROJECT

by **MIKE BAILEY**

Golf Course Superintendent, Boca Rio Golf Club, Boca Raton, Florida

AT WHAT POINT in time does a golf course become so old and outdated that a facelift is required? This is a very difficult question to answer, and there are no set guidelines to follow. While fine wines improve with age, the same scenario is not always the case for golf courses. This

is particularly true for bermudagrass golf courses in Florida.

South Florida golf courses are typically in the best condition during the first five to seven years after opening for play. Then the vigor of the bermuda gradually declines, excessive thatch builds up, and pest prob-

lems increase. Over time, "off-type" bermuda cultivars become established in the base turf of the greens. With each passing year, more work and money are required to produce the desired level of course quality.

Boca Rio Golf Club, in Boca Raton, Florida, was built in the mid-1960s. The

(Before) Bulldozers stripped the Ormond variety of bermudagrass before the fairway was fumigated and ultimately contoured.



course was designed by Robert Von Hagge and has long been known as one of the best, but often unheard of, golf courses in South Florida. Even with adherence to sound basic management programs, conditioning and course quality slipped over time, and the golf course essentially reached the bottom of the totem pole among its sister courses in Palm Beach County.

While Boca Rio was not in financial trouble, extensive course renovation was needed, and this is where my part of the story begins. In 1991 I was hired as the new golf course superintendent for the \$1.4 million reconstruction project. I had been responsible for the construction and grow-in of two 18-hole championship

country club courses in the past and really believed this project would not be difficult.

The main objectives included the reconstruction of the greens to USGA Specifications, conversion of the base turf of the tees, fairways, and roughs from Ormond bermuda to Tifway (419), and a thorough updating of the irrigation system to a computer-controlled system. Work was scheduled to commence during mid-April, be completed by mid-July, and the course opened for play by October 1st. As it turned out, the projected cost and time required for our little summer project were way off; a year's worth of work was squeezed into a six-month period.

The magnitude of this venture could never have been accomplished without the 100% cooperation of our team. The entire membership was patient during the delay and accepted the additional financial burden. The board of directors and the green committee also had the foresight to say, "Let's do it once and do it right so we don't have to reconstruct the course again for at least another 20 years."

The original architect, Robert Von Hagge, who designed the layout in 1965, was given the task of redesigning the course. The club wanted a total redesign, including more modern mounding and contours, lake modifications, the addition of interesting bulkheads, and the enlargement of bunkers.

(After) Tifway (419) provided a superior playing surface, and the architectural changes of the enlarged lake and addition of the bulkhead provided a finishing touch to the hole.



It was also important to consider the employees' point of view. The golf course superintendent and other key staff, including the assistant, the golf professional, the irrigation technician, and the mechanic all played a key role in the planning process. Their knowledge of past and expected future maintenance problems were critical in the planning process.

The construction contractor was included on the decision team. Who else had been in the trenches more? Their valuable input on various construction materials, types of machinery to perform the work, and all of their ideas to get the work done correctly helped produce a quality product.

Last, but not least, who should be your advisor? Answer: the USGA Green Section. John Foy, Director for the Florida Region, had been involved with the Boca Rio Golf Club for over seven years, gathering data and writing reports which ultimately helped this whole process come about.

With the entire team in place, work began on the 15th of April. With crews working 12 hours a day, six days a week, it soon

became evident that a lot had to be done within a short period of time.

No shortcuts were considered for the reconstruction of the greens. After all, improving the greens was what stimulated the initial project. USGA Specifications were used to the last detail: The materials were tested, layer depth was constantly supervised, and pea rock was used for the gravel base even though transportation costs to South Florida were high. The intermediate coarse sand layer has proven to be most effective.

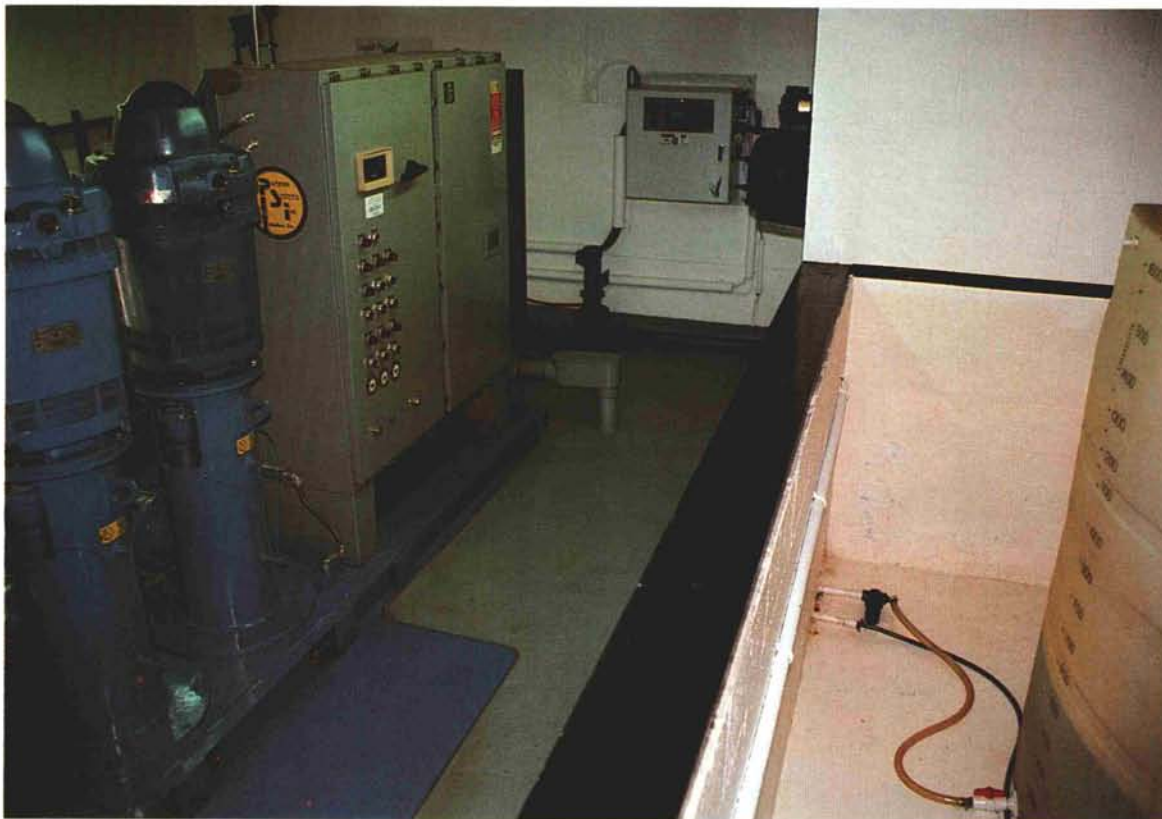
Most important, a dual irrigation system was installed! Two totally separate systems were employed — adjustable half-heads for the greens and adjustable half-heads to throw outward onto the green surrounds. A plastic side wall was placed around the edges to properly control moisture levels both in the greens mix and in the collar soil.

It is inconceivable to think of anything else but two separate systems. There are so many evenings when the collars and slopes require irrigation, while the root zone mix is perfectly moist. Proper irrigation has re-

sulted in greener slopes, yet no algae on the green surface. Often, I hear of superintendents complaining, "I've got to irrigate the greens because the slopes and collars are burning up." One local superintendent even told me that his crew hand syringes the collars because of dryness, yet his USGA greens are perfect. Given the proper soil medium with its respective irrigation head, the green surface can be visually compatible with surrounding areas even though the soils in the two areas may be completely different.

At Boca Rio, the native soil is not sandy like what most tourists might see at the beach. This soil holds water in low-lying fairways and rough areas, yet dries out on mounded areas such as green surrounds. So far, with eight months of irrigation knowledge tucked under our belt, we're finding irrigation is required every third night on the green surrounds, while the greens hold proper moisture for five to six days.

The length of irrigation cycles also needs to be discussed. Surrounds require small amounts of water on a frequent schedule,



(Left) The new variable frequency drive pump station, with a tank inside of the containment wall (right) to allow adjustment of water pH, now provides a computerized state-of-the-art irrigation pumphouse.

(Opposite page) Architectural markings provided a preview of the future changes.

with times averaging 10 to 15 minutes. The greens require more water, but less often, to establish field capacity and then hold that moisture for several nights. The greens versus the surrounds are as different as day and night and must be irrigated as such.

Even though we still have some bugs to work out on the new computerized irrigation system, it allows us to be more creative. Different programs are employed for the different times of the year. This past winter when ET (evapotranspiration) rates were low, we found the USGA greens holding proper soil moisture for up to nine days! The rocky green slopes, however, still required irrigation every fourth night. Learning the system and paying attention to respective moisture areas has created a drier and more playable golf course, yet greener and healthier turf for the golfers.

On top of the course renovation, a new pump station had to be installed only one month into the project. The old pump station was rusting away because the building lacked the proper roof structure and failed to provide any sort of weather protection or

security from legal liabilities. In addition, the old pumps were located directly in view of the clubhouse and, unfortunately, in the landing area of tee shots on the first hole. I suggested relocating the pumphouse to the other side of the fairway, behind the left fairway bunker, totally out of view and out of play.

Three months and \$130,000 later, this task was completed and a new VFD (variable frequency drive) pump station was installed. The new VFD pumping system is like comparing a World War II Jeep to a new Cadillac. Everyone speaks of the VFD's electrical efficiency and the cost savings, but I emphasize the softness and the virtual elimination of typical line hammering. The VFD does not deviate more than 2 PSI downstream, so consistent water pressure allows for an extremely smooth operation. Knock on wood; we have not had a blow-out — a miracle considering the matching done of new irrigation pipe around the greens with the old pipe in the fairways.

Over 100,000 yards of clean soil material was trucked in from off-site locations. Previously non-porous, rocky fairways were

excavated and new soil material was installed to improve percolation. Mr. Von Hage capitalized on the by-product to create additional mounding.

A new pH water monitoring device was installed at the pump station. The lake irrigation water, with a pH of 8.2, is neutralized to 7.0 by sulfuric acid injection. By flushing the high bicarbonates and sodium in the soil, wet spots are disappearing and percolation is improving further. This is another management tool that just a few years ago was not available in the golf course market.

The regrassing of the golf course also was a major project. Originally, Ormond bermudagrass was established throughout the course, except on the putting surfaces. This cultivar was a vegetative selection found in Ormond Beach, Florida, and was released by the University of Florida in 1962. It was a better fairway/rough turf than common bermuda, but it was inferior to Tifway (419). In particular, Ormond exhibited less wear and pest tolerance, as well as increased sensitivity to a number of the





Fairway excavation removed the coral rock and muck soil pockets that previously hindered water percolation through the soil.

newer, more effective pesticides. This turf conversion project made it possible to provide an improved playing surface with a more environmentally sensitive management program.

To start the conversion process, entire golf holes from tee to green were fumigated with methyl bromide to eradicate the old bermudagrasses and make way for the improved cultivars. Soil sterilization was necessary to ensure against regrowth of the old bermuda cultivars. Even with two to three applications of glyphosate, regrowth has occurred at other courses. Soil sterilization also reduced seed and nematode populations that had built up over the years.

Tifdwarf was planted on the greens and collars. Tifgreen (328) was planted halfway down the green slopes as an encroachment barrier to the Tifway (419) planted on the fairways and roughs. Tifgreen also was planted on the tee surfaces and slopes so that they could be maintained like the greens.

Another major project was the removal of noxious exotic Brazilian pepper trees. Twenty-three years of growth had allowed them to overtake the slash pines and cypress stands. Often, fairway bunkers were virtually obscured from view at the tee. A massive tree-clearing effort restored the overgrown 85 acres of turf back to 125 acres. The opening effect allowed for more fair play, not to mention revealing the majestic 125-year-old cypress trees. Over three months of heavy tree clearing created shredded wood piles the size of a two-story house. Mr. Von Hagge capitalized on the by-product to create additional fairway mounding that was capped off with excavated fairway soil.

The project list just keeps on going. This past summer, all 100 bunkers were excavated, reshaped, and enlarged. Drainage lines were installed, and grey Terra Bond cloth was lined in the floors and sidewalls, while DOT Trap 200 sand was installed.

The cloth liner is a must for any environment where rocks and contamination are prevalent.

If all this was not enough, various problems revealed that new cart paths were a must. The previous asphalt cart paths were originally going to be saved and used again. In some instances, paths were located on the wrong side of the green. Within two months of the project, \$200,000 worth of new paths and earthwork allowed the architect to truly redesign the course.

The entire golf course has taken on a totally new image. Mr. Von Hagge has created larger greens with an average increase from 5,400 to 8,100 square feet. The first hole now has a relocated pump station, a challenging bulkhead wall to the left of the green, and a new two-tier green protected by three ominous bunkers. This visual concept carries on for 18 new golf holes. Boca Rio is now back in the high life.