Biting the Bullet: Greens Complex Reconstruction at the Country Club of Virginia

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WHAT IMAGE comes to mind when you think of a golf course constructed 65 years ago? To the golfer it might be thoughts of a mature, traditional layout weaving through wooded, gently rolling hills. A golf course superintendent might describe a golf course with small, slow-draining greens complete with compacted soils and a mix of bentgrass and *Poa annua*. This latter scenario described the conditions at the James River Course at the Country Club of Virginia before the reconstruction began.

The James River Course at the Country Club of Virginia in Richmond was opened for play on June 30, 1928. It was designed by William Flynn and constructed by Frederick Findlay. Mr. Findlay, who built much of the original character of the golf course, eventually became the golf course superintendent and an accomplished architect in his own right.

Since the late '60s and early '70s, the old course began showing signs and problems associated with age. All were classic problems, including:

- Small greens.
- Original green design had been lost over the years, and most had become more oval in shape.
- Poor internal drainage within the greens.
- Enlarged and encroaching bunkers.

There were other problems, too. For instance, golf equipment and golfer skill had evolved to such an extent since the 1920s that the course was now playing much shorter. This, in turn, created a fairway visibility problem because golfers were clearing areas which were unapproachable before. Furthermore, the "postage stamp" size tees of the early years were not capable of handling the increasing amount of play. Ultimately, though, the emphasis of the golf course renovation project came down to the greens.

The restoration work had been in the long-range plans for a number of years. Essentially, the work was needed because of the inconsistency in the health of the turf on the greens. Several other factors contributed to the need for renovation of the course. First, there was the encroachment and infestation of common bermudagrass from the edges of the greens. The encroachment was partially responsible for the greens losing their original size and shape.

The second consequence of time was the condition of the old German bentgrasses with which the greens were originally planted. Examples of different strains of bentgrass with varying colors, leaf textures, disease susceptibilities, etc., could be found on every green. Fred Findlay even developed two of his own bentgrass varieties, James River I and James River II, from the patches in the greens.

Increasing traffic, lower mowing heights, and even changing climatic conditions had made it difficult for these grasses to perform to today's standards. The newer bentgrass varieties have enhanced heat tolerance, better rooting, and better disease resistance compared to some of the old strains. Also, they have a more upright and consistent growth habit and can provide the good quality playing conditions desired by today's golfers. Moreover, the newer bentgrasses provide a more consistent appearance, at least for many years, and should tolerate the lower heights demanded today for faster greens.

Perhaps the most critical factor in rebuilding the greens was to improve both the internal and surface drainage problems. Typically, the old greens had only one exit point for surface drainage, and this usually was to the front of the green. Also, pockets near the center of the greens were prone to turf loss due to water accumulation and traffic problems. These were not good circumstances in which to grow reliable turfgrass in Virginia, right in the heart of the Transition Zone.

To correct these problems, we established a team of experts to develop a workable master plan, create a budget, sell the idea to the membership, and, finally, complete the reconstruction project. The key components of this team were the architect, an overseer, the general contractor, the golf committee chairman, a select group of members, and the staff all working together. The club went through a detailed process of selecting the golf course architect, eventually selecting Rees Jones.

The other members of the team were the agronomists of the USGA Green Section Mid-Atlantic Region. Stanley Zontek, Director of the Mid-Atlantic Region, was an important contributor, along with Bob Brame. Mr. Zontek, by coincidence, had worked cooperatively on a renovation project with Rees Jones just a few years earlier. The continuity between the team players was critical to the success of our project. Not only were we getting a team that had worked together before, but we had a well-recognized group. As a matter of fact, once the team was secure and the project approved, the membership's attitude changed from apprehensive to one of excitement and anticipation. Landscapes Unlimited, Inc., of Lincoln, Nebraska, was selected as the general contractor. Of particular interest to us was their experience in building greens to USGA recommendations. Once under contract, they were on-site and began working within two weeks. All work began April 1, 1992. More than one comment was made about starting the project on April Fool's Day!

By the time Landscapes Unlimited had finished planting the greens and had left the property, it was early October. Within that period of five months, we had rebuilt

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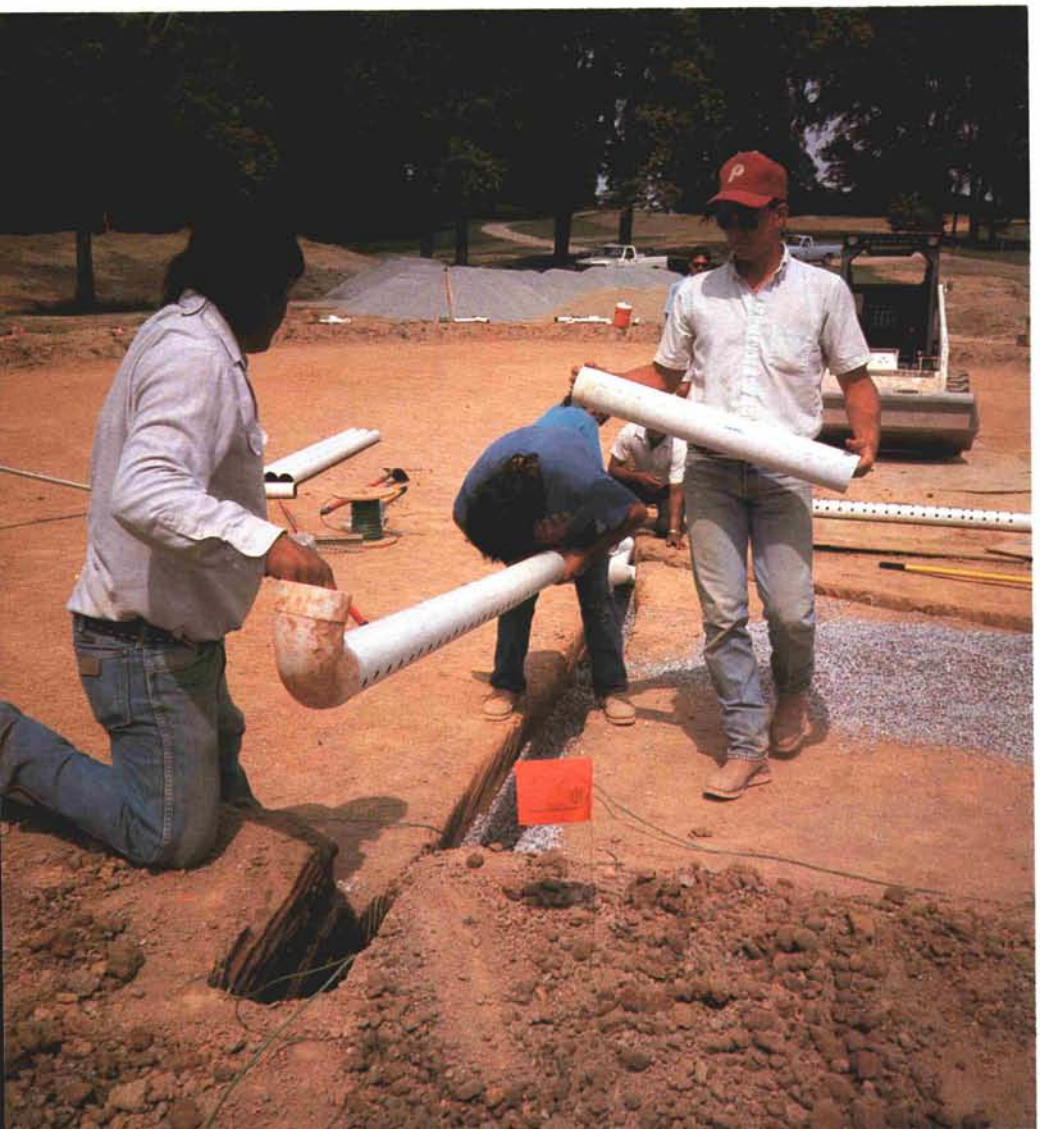
(Above) Taking the blade to a problem green.

(Left) At the rear portion of the seventh green, an elbow section was installed as the basis for a flush-out drain for the main line. The orifice for this flush-out will be protected by a valve box.



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19 green complexes and all or part of 13 fairways, constructed 58 sand bunkers, enlarged tees, created two large lakes, and installed a double row, computerized irrigation system.

Before the reconstruction process started, all the construction materials were analyzed and selected. By working with an experienced soil testing laboratory and our advisors, and with an expense of almost $7,000 for tests, we were able to find quality construction materials. Eventually, a mixture of 80% sand and 20% Canadian sphagnum peat was selected for the root zone mix. This topmix met all the USGA recommendations and tested at 16.2 inches per hour percolation rate. All materials were to be mixed offsite, and a balanced blend of fertilizer and lime were included during the blending process.

The sand was an especially good material, not just for its particle size, but also for its uniformity, particle shape, and absence of fines. Eighty-five percent of the material tested in the coarse- and medium-sized sand fractions. The use of soil in the green con-

Methyl bromide fumigation was a key step prior to the seed bed preparation. We were convinced this was necessary due to the amount of bermudagrass established during construction on the green cavity wall.

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struction mix was never a consideration due to our desire to maintain an accelerated rate of percolation.

When the actual construction began, it was very methodical and deliberate, with attention to quality. Our assistant superintendents were positioned at each green site throughout the entire process. Rees Jones approved each green shell cavity before subsurface drainage work began. It was his desire to have the shape of the subgrade conform as closely as possible to the final shape of the green. The personal attention to each step by Mr. Jones and his architectural assistant, Steven Weisser, deserves special recognition.

The drainage system was installed from the back of the green to the front, using a herringbone design with laterals installed on 15-foot centers. In the process of working back to front, the trenches, gravel, rigid drainage pipe installation, and intermediate layer were done almost simultaneously. To protect the subgrade and materials, ¾-inch plywood was used as a buffer below the skip loader. Every step of the way, the gravel and intermediate layer were constantly gauged to ensure the correct depths.

In addition, at the low end of each green, a "smile" perimeter drain was installed to intercept any additional drainage water that might collect at the interface of the subgrade and native soil collar. Flush-out boxes were installed at the top of each green and at the head of the main drain line. The final touch was the addition of a 14-gauge copper wire to designate the main drain lines, as well as the perimeter of the green. This will help in the future for determining the original green configuration and locating drain lines.

The hard part was finally over! Now it became a simple matter of filling the green cavity with the topmix. Each green averaged about 6,200 square feet, and about 7,000 tons of topmix was needed. After the greens mix was in place, irrigation was installed, followed by the completion of the bunkers and the sodding of the entire putting green complex. The greens were left to settle and firm up until the time was right for planting in late August.

When the optimal planting temperatures had finally arrived, the greens were fumigated with methyl bromide and prepared for seeding. Once this was done, Mr. Jones designated and approved the final putting green contours. To help the establishment process, an organic turkey manure by-product fertilizer was applied at the rate of 1.5 pounds of actual nitrogen per 1,000 square feet. The greens were seeded to Pennlinks creeping bentgrass, applied in three different directions using a drop spreader at a rate of 1.5 pounds per 1,000 square feet. The seed was worked into the soil, using leaf rakes, and then rolled.

Within two weeks, we had uniform germination and a solid stand of new grass! By mid-October, all the greens were being mowed every other day using walk-behind mowers set at a height of ¼". This was a remarkable accomplishment. It is still too early to be definite, but an opening date in mid to late summer of 1993 is tentatively planned.

Large-scale renovations such as this one are rare. When envisioning the restoration of a historic, championship-quality golf course, seldom is it thought of on such a large scale. Furthermore, the tendency is to underestimate the amount of work involved. A key to the successful outcome comes back to "the team." They helped formulate a workable, common-sense, and agronomically sound plan to develop a better golf course for the future. Moreover, everyone on the team assisted in ensuring the integrity of the process and the final construction effort. Eventually, when the course is reopened for play, people will be enjoying a better golfing experience that will serve them long into the future.

It was a big project, but we can all look back with pride at what has been accomplished. Our membership "bit the bullet," did the job right, and we now have a better golf course for it. Perhaps our success will serve as a pattern for other golf courses that have similar problems and need similar solutions.