

# GOLF COURSE CONSTRUCTION: A RIP-OFF IN THE MAKING?

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**I**N THE CURRENT frenzy of golf course construction, there are many unsuspecting developers, investors, and private clubs being taken for millions of dollars. A handful of architects and contractors are taking money to the bank by the truckload, and many of the courses for which they are responsible are being poorly constructed.

Building a golf course is not unlike any other form of construction in that it is money paid for design, labor, machinery, and materials. It is actually that simple.

I recently received a call from an individual who inquired about the cost of golf course construction. He had a good piece of property in a real estate development that was large enough to accommodate an 18-hole golf course. Not knowing where to start, he called the office of a prominent golf course architect. He was quoted a figure of between \$6 million and \$7 million for the construction of the course, even though the architect's representative had never seen the property. How could anyone justify a statement like that? Has golf course design and construction become a license to steal?

Recently, a well-known golf course architect was quoted concerning the rebuilding of the greens on a course that he had designed and constructed just ten years ago. He stated, "Golf greens, like anything else, have a normal ten-year life span before they have to be rebuilt. This course is played more than most courses, so it gets heavy use. It's normal to undergo reconstruction at this stage."

Consider what this fellow is saying! Under his premise, any golf green that gets "heavy use" must be rebuilt every ten years. He then stated that the cost of rebuilding each green would be about \$35,000 and that the cost of the entire project would be about \$700,000. It appears from their comments that the club will have to go through the whole thing again in ten more years!

The fact is, if the greens had been built properly in the first place, they would not have to be rebuilt. Theoretically, nothing short of an earthquake

should ever alter the proper functioning of a well-built green. The USGA method of green construction is a proven entity, but many architects and contractors will try to push for a modified method of construction and state that "it is almost as good as a USGA green."

If an investor is going to spend millions of dollars on a new golf course, why would he take a shortcut on the most important facet of the construction? The answer is simple. It takes more time and more money out of the contractor's pocket to construct a properly built USGA green with proper tile size and spacing, a 4-inch gravel blanket over the tiles and subgrade, 2 to 4 inches of coarse buffer sand, and 12 inches of approved topmix that has been mixed off-site in some type of soil shredder or mixer. Based upon a recent construction project, it costs between \$23,000 and \$25,000 to pre-mix, three times, the proper quantities of sand and peat, and then run the mix through a soil mixer. It might also cost about \$6,000 for trucking the mix to the green sites, using three tandem trucks over a six-day period. These figures are based on building 19 greens, averaging 6,000 square feet each. Many architects and contractors would rather just dump the sand into the green, throw on a layer of peat, and rototill the whole thing together. After all, it is easier and more profitable from that point of view.

**T**HE EXORBITANT figure noted earlier for greens construction of \$35,000 or more per green is fairly common today, especially with the "Designer Courses" being constructed. My experience suggests, however, that the cost of a properly built USGA green, estimated contracted price, should run between \$3.50 and \$4.50 per square foot, or \$21,000 to \$27,000 per 6,000-square-foot green. The lower figure is more in keeping with reason, with the high figure applicable only in parts of the country where trucking the sand or peat great distances would influence the price.

The "Designer" or "Signature" golf course is a whole new concept in golf course design and construction. Loosely, these terms suggest that one of the world's better-known golfers-turned-architects or one of the world's better-known architects-gone-ridiculous "designs" a golf course for the country club, real estate developer, or private owner or investor. Very often, this person does not actually design the course. Instead, he has a large staff turn out a few sketches, a topographical map on two-foot grids, and an aerial photo, then cranks out the design. The signature person can charge a cool fee up front for the design and then make a few token appearances at regular or irregular intervals so that the investors, whoever they happen to be, feel they are being graced by the architectural genius of a present-day Michaelangelo.

During these visits the designer makes various and sundry changes such as moving five or six greens from their present roughed-in locations to different locations, only because his creative genius compels him to do so. Were this a bid type of construction project, one can bet that when a green is built it is going to stay in the original location. A good architect has the majority of the major problems spotted and all relocations noted on the original draft before the first yard of soil is moved. This is what an architect is paid for.

The open checkbook policy has led to some outrageous price tags for golf courses. As each new "Designer Course" is built, it has to be better than the previous project because everybody wants to have the fastest car on the road. The open checkbook policy opens the door to a lot of useless spending.

**T**HE POINT I am trying to make here is that there is a logical sequence of events that leads from the design to the completed construction of a golf course. It is not a feat of magic, and it is certainly not some ambiguous open checkbook contract that allows the project to ramble on until completion.

The construction of a golf course breaks down very nicely into its compo-



*Straw mulching with a power blower.*

nents. The design is completed, it is staked out with a walk-through to verify the layout, and any preliminary changes are made before the construction begins. The construction is then broken down into various phases.

Begin with the clearing work. How many acres is involved, how is the debris to be disposed of, and where and how is the burying to be done?

Next consider the rough grade. How many yards of soil will be moved and to what grade? A detailed blueprint determines the necessary cuts and fills. Naturally, there will be some changes, and they should be considered part of the project. However, they should not exceed 15 percent. The average cost for moving soil is about \$3 per cubic yard.

**T**HERE IS A three-phase program for hauling soil. The sod or grass must be stripped and stockpiled in a convenient rehaul location. The topsoil, if there is any, must also be stripped and stockpiled for redistribution at a later time. The subsoil can then be moved, be it a cut or fill. Later, the topsoil has to

be replaced over the subsoil and the final grade is established.

The finish grade is not included in the price of moving soil. When moving soil up to 150 cubic yards, the cheapest way is with a D-8 or TD-25 class dozer. Greater quantities of soil are cheaper to haul with a pan, scraper, or pull. It is also less expensive to use a self-loader type pan with two engines, one on the tractor and one pushing from the rear. A single-engine pan is more costly because it requires a separate dozer for pushing.

Finish grading is often the most difficult part of the project to reconcile because, unless it is precisely spelled out, the investor does not know just what it covers. In essence, it is a finish grade over the entire project apart from the greens and tees. So, the finish grade should break down into fairways, roughs, and non-use areas. All features or mounding are included in the finish grade.

Seedbed preparation can be a complicated business because all debris has to be removed to provide a satisfactory

seedbed and to avoid mowing problems after establishment. It is up to the contractor to determine how he will dispose of the rocks and debris. Root rakes and rock pickers do just so much; the final picking must be done by hand. Unless a thorough job is done, rocks and debris can play havoc with mowing at a later date. One course went through more than 300 triplex reels during its first year on what should have been top-quality bentgrass fairways.

Seeding and stolonizing needs are not so difficult to determine. If the course is to be seeded, as most are, then a decision must be made concerning grass species and seeding rates to be used on the tees, greens, fairways, roughs, and out-of-play areas. If it is to be stolonized, then the number of bushels of sprigs needed per thousand square feet or per acre must be calculated. Fertilizer and lime needs must also be determined.

Soil sterilization is not as common as it once was because of the elimination of soil from mixes for greens and tees. In the South and West, however, sterilization remains an essential part of the



*(Left) An off-site mixing operation using a front end loader and Lindig soil mixer.*

*(Right) A track-hoe enlarging a lake into a water hazard.*



construction procedure. (The USGA strongly recommends fumigation as part of new putting green construction.) A spray application of Tupersan after seeding will prevent the establishment of a majority of weeds on a spring or summer seeding.

Mulching is a key step in successful turf establishment. Though I don't advocate mulching the surfaces of putting greens, I do favor mulching everything else with a clean, straw mulch. It not only helps control erosion, but it also

helps retain moisture for good seed germination and establishment. A good straw-blowing operation can easily cover ten acres per day. Some weeds do result from mulching, but mowing and herbicide use can eliminate them quite readily.

The cost of installing an irrigation system can range from a nominal amount to a fortune. Tees, greens, and fairways are no longer the only areas that are watered. Multi-row or fence-to-fence systems are not unusual. It comes

down to how much area you want to irrigate, how much water you have, and how much money you're willing to spend.

Water can be from a lake, river, deep well, or holding facility, or it can be purchased from a municipal water company. Pumping systems can yield from 500 to several thousand gallons per minute. The decision depends greatly upon the geographic location and anticipated maintenance standards. The cost of an irrigation system can vary

from a quarter million dollars to well over one million dollars. Estimates should include the cost per irrigation head and the cost per foot of pipe and wire. Controllers are so elaborate today that virtually anything can be done. Make sure that you get what you pay for, and that the system is installed to grade and tested prior to seeding.

Sand bunker construction should be straightforward enough, but shortcuts and unnecessary expenditures for designer sands are not uncommon. Make sure drains are installed in each bunker and that they do not exit the bunker and end up in a low-capacity dry well. Bunker sands are available in all types of colors and prices. It is not necessary to have sand flown in from the Sahara Desert via the Flying Tigers on 747s to satisfy the whims and desires of the architect. Often, there are many good sands available at reasonable prices. Choose carefully.

Cart paths are just a way of life on golf courses today. If you want to have carts and good-quality turf, then paths

are needed. They can be constructed from many suitable materials, including crushed stone over geotextile fabric, asphalt, or concrete. A typical course would have between 21,000 and 25,000 linear feet of cart paths. They should be at least eight feet wide because it is less expensive to install with large equipment and because this width can accommodate maintenance equipment as well as golf carts. When the paths are installed prior to the final seedbed preparation and seeding, the contractor can use the paths and avoid the need for service roads on the course. Cart path installation at an early stage on a new course also allows for incorporating them into the design with greater aesthetic concern.

**T**HESE ARE the major facts of constructing a golf course. Please remember that some golf course superintendent has to maintain what an architect designs and a contractor builds. Consider the maintenance costs prior to construction to be sure that

there is enough money to maintain what will be built.

Golf course construction is not some magical operation that transforms a piece of ground into a golf course. It is a step-by-step operation that should be accounted for in numbers and procedures. Make sure that you get what you pay for, and do not be mesmerized by a personality. There are many architects and contractors in the business who can design and build a golf course to suit your budget; the open-checkbook approach, which greatly inflates the cost of golf course construction, should not be part of the project.

*Editor's Note: Mr. Miller is well qualified to write on the subject of golf course and putting green construction. He has built more than 50 putting greens to USGA specifications and has recently finished building a new golf course, Quail Chase Golf Club, in Louisville, Kentucky. Two other courses, the Oxmoor Golf and Steeple Chase Club and the Glen Mary Golf Course, are currently under construction.*

## ALL THINGS CONSIDERED

### Consider *Poa annua* For Your New Green

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**E**STABLISHING a new putting green with *Poa annua* might not seem like sound agronomy, but when the concern is consistency, it would have great appeal to the average golfer. Even though the serious turf student would probably not agree, I think a newly built green on an old golf course should be planted with the grass that exists on the remaining 17 greens, even if it happens to be *Poa annua*.

You are likely asking yourself how the decision to plant *Poa annua* on a new green can have any merit when practically everything that has been written says otherwise. The answer is that one of the fundamentals of golf course management, not necessarily turfgrass science, is to try to maintain all 18 greens of the same general character and putting quality. Reestablish-

ing a new green with a foreign-looking turfgrass, such as bentgrass, is a problem if this is your philosophy.

First of all, bentgrass looks different, not better or worse, but different from *Poa annua*. I admit that an average golfer usually can't distinguish *Poa annua* from bentgrass on a bent/*Poa annua* putting green, but put a bentgrass green in the middle of 17 bent/*Poa annua* greens, and they can pick it out every time.

Second, a bentgrass green has different playing characteristics because it must be kept on the dry side if you truly intend to maintain bentgrass properly. This makes the green firmer than the others, and perhaps a little faster. Again, consistency is jeopardized for the sake of pure turfgrass science.

This philosophy of establishing *Poa annua* instead of bentgrass should also

carry over to the putting green nursery. In this way, repairs that must be made using sod from the nursery will heal without notice. If repairs are made with bentgrass sod in a predominantly *Poa annua* green, the scar will not disappear for several years.

Even though this opinion may never appear in the textbooks, I feel strongly about not sacrificing the consistency of the greens for the sake of growing bentgrass in the middle of a *Poa annua* golf course.

*Editor's Note: Be sure to consider regional concerns, such as severe winter weather or extreme summer heat, when selecting a grass for establishing a new green.*