

Building And Maintaining The Truly Affordable Golf Course

The do's and don'ts of affordable golf.

by JIM MOORE



With good planning and common sense, "affordable golf" can be more than a catchy phrase.

LIKE THE ECONOMY, and at least partially because of it, golf has enjoyed tremendous growth in recent years. More people than ever are taking up the game and are shelling out more money than ever before to play it. Golfers all over the country are paying \$50, \$60, \$70, and more to play a round of golf. At least they are now, in an economy that has flourished. What will happen if/when we have less disposable income to spend on recreation? Also, golf has been marketed hard to socioeconomic groups that historically did not have access to the game. If golf is not truly affordable, where will these new golfers play?

With average golf course construction costs typically ranging from \$1.6 to \$4.5 million (American Society of Golf Course Architects web page at www.golfdesign.org. Figures do not include the cost of land, clubhouse, entry road and parking lots, maintenance facility, architect fees, etc.) and the total cost of putting a new course on line frequently exceeding \$10 million, just getting the course opened is extremely expensive. After opening, the facility obviously must be maintained.

Annual maintenance budgets have increased steadily for many years, reflecting golfers' desires for high quality course conditioning. The 1998 18-hole average maintenance budget for private courses is \$635,930, it is \$576,423 for resort courses, and it is \$383,819 for municipal courses (Golf Course Superintendents Association of America). Looking at it another way, assuming 30,000 rounds of golf per year on the private course, more than \$20 in maintenance is expended for every round. Given these costs, it is no surprise that the phrase *affordable golf* is on the hopeful lips of everyone in the golf industry these days.

There are many courses across the country that already offer golf at very affordable prices. Although they don't make the cover of anyone's magazine and they often have playing conditions that are far from perfect, they do offer millions of golfers a place to play and enjoy the game at a reasonable cost. What makes these courses so affordable to build and maintain? They have employed some or all of the following principles and practices.

When Preparing to Build the Course, Select a Site that Requires as Little Earth-Moving as Possible

Site selection has the greatest single impact on the eventual cost of building a new golf course since heavy earth-moving tasks are the most labor and equipment intensive. These tasks include general clearing, stockpiling and purchase of topsoil, excavation of the subgrade, rock removal, rough shaping, and fine grading. Although there are a few notable exceptions, the majority of sites selected for the construction of new golf courses are less than ideal in terms of contouring. As a result, it is now common to move tremendous amounts of soil in the form of cuts and fills. At one time, moving more than 200,000 cubic yards of earth was considered unusual if not excessive. Today, it is not uncommon to move over 1,000,000 cubic yards to build and shape the new course. As a result, the cost of the heavy earth-moving tasks alone can easily exceed \$1,000,000. Obviously, hole routings that result in large cuts and fills add greatly to the cost of construction, as do design fea-

tures such as excessive bunkers, hollows, and mounds.

Selecting an appropriate site and developing a good design that requires as little earth-moving as possible will go a long way toward making the course truly affordable. Agricultural lands usually are excellent choices for such courses. They typically have plentiful topsoil, good surface drainage, and a minimum of trees and brush. When combined with a design that requires only limited earth-moving, such courses may be unremarkable in their overall appearance. They also are far less expensive to build and maintain, and therefore less expensive to play.

During Construction, Keep Steep Slopes to a Minimum

Steep slopes created during construction are not just costly to build — they are also expensive to maintain. Slopes in excess of 3:1 (for every 3 linear feet the elevation changes by 1 foot) almost always require specialized mowing equipment or must be mowed by hand using line trimmers or hover-type mowers. They also are more difficult to water and fertilize, adding further to the cost of maintenance. While softer slopes offer less dramatic visual accents to the course, they can be mowed with large riding equipment. Since labor is the most expensive aspect of golf course maintenance, layouts that can be maintained properly with smaller crews result in long-term savings that can be passed on to the golfer.

Select a Design that Requires Less Trim Work

Trim work is the most labor-intensive aspect of golf course maintenance. This is particularly true in the southern portions of the country, where bermudagrass is the predominant turfgrass used on courses. Perimeters of lakes, creeks, bunker edges, sidewalks, and cart paths, and around the bases of trees, signs, and ballwashers, all require near-constant trimming. On highly maintained courses it is not unusual to find 6 to 8 crew members devoted solely to trim work throughout the entire growing season. Bunkers and water features are particularly labor intensive, so the more they can be kept to a minimum during the original design of the course, the greater the labor savings will be each year thereafter.



Heavy earth moving is expensive. This operator is making a cut of at least five feet.

Build Fewer Sand Bunkers — and More Grassy Hollows

Although sand bunkers are not overly expensive to build, they are second only to greens in terms of the labor required to maintain them to the standards today's golfers have come to expect. Unfortunately, the trend in golf course design over the past couple of decades has been to increase the number of sand bunkers placed on the course. Today, it is not uncommon to find 50 or more bunkers on a course, where in the past 20 to 30 would have been considered sufficient. Each of these bunkers requires labor-intensive tasks such as edge trimming, periodic addition and replacement of sand, frequent raking (both mechanical and by hand), and the shoveling of sand back onto the bunker faces following heavy rains. The affordable course should keep sand bunkers to a minimum. Twenty well-placed sand bunkers can provide plenty of challenge without overwhelming the maintenance staff.

The style of the sand bunkers also affects the amount of maintenance required to keep them in good shape. Steep, flashed faces are attractive but invariably result in the washing of sand from the faces during heavy rains. Grass-faced bunkers with relatively flat sand surfaces are far less intensive to maintain, and the sand will last longer because there is much less chance for soil to mix with the sand.

Softly contoured grassy hollows can provide plenty of challenge to the player. In fact, the flop shot required from a closely mown grassy hollow to an adjacent elevated green can be even more difficult than a shot from a sand bunker. Unlike bunkers, grassy hollows require virtually the same maintenance as the other turf areas around the greens or fairways and therefore require no additional cost to maintain properly. The combination of challenge, beauty, and low maintenance requirements make grassy hollows an ideal choice for the facility striving to provide affordable golf.

Build Agronomically Sound, Sensible Greens

Like irrigation systems and drainage, the construction of greens is not an area in which corners should be cut in the effort to save money. Well-built greens are much less expensive to maintain throughout the remainder of their lives than those that are built poorly. Recently, there has been something of a trend to reduce the cost of building greens by leaving out such critical components as drainage tile, the gravel drainage blanket, and organic matter from the root zone itself. Yes, greens can be built for less money without these components, but at what cost ultimately? For nearly 40 years greens have been constructed to the admittedly stringent USGA guidelines. Since greens are expected to last a minimum of 20 years and in most cases

much longer, and since greens are easily the most critical physical component of every golf course, the extra effort and expense to stay with these time-tested and scientifically sound construction techniques is well justified. The fact is, well-built greens are not expensive in the long run. A good analogy can be made to building a house. There are houses that look great when they are new, but they are constructed using substandard plumbing, wiring, and foundation materials. Such houses soon become maintenance nightmares for the owners. Then there are houses that are solid as rock from the bottom up and are simple yet functional in their design. These houses provide years of trouble-free living and are unquestionably the better long-term investment. Likewise, greens that are constructed utilizing proven agronomic principles are better investments.

This is not to say that money cannot be saved during the construction of

USGA greens. Most communities have multiple sources for sand and gravel. In many cases, it is possible to identify (through laboratory testing) lower-cost materials that meet USGA guidelines. In 1993 the USGA modified the guidelines to provide the option for leaving out the intermediate layer. By selecting properly sized gravel and sand, the intermediate layer can be omitted, resulting in significant savings.

A new and potentially promising aspect of green construction is the utilization of inorganic amendments in the root zone mixture as a substitute or complement to traditional sand/peat mixtures. However, these amendments are extraordinarily expensive. For example, a typical 19-green construction project requires approximately 7,000 cubic yards of root zone mixture. Assuming the 12-inch-deep root zone mixture will be composed of 85% sand and 15% either peat moss or one of the inorganic amendments, the cost of

that mixture varies dramatically. The cost of the peat would be approximately \$32,000, whereas the cost of either of two of the most popular inorganic amendments easily exceeds \$200,000 (both figures include the cost of shipping to Dallas, Texas). Incorporating the amendments in the upper few inches of the root zone instead of through the entire profile can reduce their cost. However, this results in root zone layering that is inconsistent with the USGA's guidelines. In addition, there is little research available on the long-term stability of the inorganic amendments and their impact on the root zone. For these reasons, the USGA does not currently recommend the use of inorganic amendments in the construction of new greens.

Avoiding extreme contouring of the green site itself also can significantly reduce the cost of building greens. In addition to the large quantities of fill material and topsoil necessary to con-



Although obviously beautiful, the natural areas require minimal trimwork.

struct such sites, the steep contours often preclude the use of riding equipment for greens mowing. This permanently increases the labor requirements for green maintenance. And, although such green sites are dramatic, they contribute nothing to the development of a top quality putting surface.

Reducing the total square footage of the putting surface also reduces the cost of construction and maintenance. There has been a trend toward very large greens over the past 15 to 20 years. At one time, a 5,000-square-foot green was considered large. Today, greens are frequently in excess of 7,000 square feet. Obviously, greens must be large enough to endure the traffic they receive. However, a small green that is located in an area with good growing conditions (particularly adequate light and air movement), has plenty of entrance and exit points, and has contours that allow a wide selection of hole locations, will outperform a large green that does not have such attributes.

Plant the Right Grasses Throughout the Course

Perhaps no aspect of the potential for affordable golf has been more overlooked than the choice of grasses for the course. Thanks to the efforts of turfgrass breeders and scientists, and the support of many of these programs by the USGA, the industry has a greater selection of grasses for golf course use than ever before. Many of these grasses have very low maintenance requirements. However, since they seldom provide the level of perfection today's golfer has come to expect, they are underutilized. For example, improvements in buffalograss have yielded varieties that are perfectly suited to golf course roughs, typically the largest acreage of the course. Once established, buffalograss requires miniscule amounts of water, fertilizer, and pesticides. It seldom needs mowing and provides a turf canopy that fairly penalizes the errant shot without making it difficult to locate the ball. If there was ever a grass that personified the concept of affordable golf, it is buffalograss. So why is it not extensively used on today's new courses? First, it is slow to establish (two to three years from seed) — a trait not well received in today's instant-everything society. Second, when properly maintained, buffalograss does not provide the lush green color desired by so many golfers. Buffalograss turns brown when under drought stress and, depending on the



Without question, bunkers such as these are beautiful assets to any golf course. However, they are far more expensive to build and maintain than a grassy hollow.



variety, develops seedheads that some find unattractive. In other words, in spite of the fact that the grass provides excellent playing quality for the rough at a very low price, many golfers find it too unattractive for widespread use.

An even more glaring example of how choosing the wrong grass can impact affordable golf is the trend all

across the southern portion of the country to establish bentgrass instead of bermudagrass greens. Maintenance costs (particularly for pesticide, water, and labor) increase dramatically when bentgrass (a cool-season plant) is planted in a climate that is far better suited to bermudagrass (a warm-season plant). At one time, it was difficult for



Mounds such as these are dramatic in appearance and appeal to some. However, they are expensive due to the large degree of hand work necessary to build and maintain them.

the bermudagrass golf course superintendent to provide a putting surface comparable to his bentgrass brethren. However, thanks to the development of better equipment, improved bermudagrass varieties, and the expertise of today's highly trained superintendents, bermudagrass greens can and do offer outstanding putting quality.

Establish Reasonable Maintenance Standards Throughout the Course

To put it bluntly, today's golfer is spoiled when it comes to course conditioning. Expectations of the daily player have risen with each televised tournament displaying hand-mown greens, tees, and even fairways. Perfectly manicured flowerbeds are timed for the ultimate tournament-week display. Fairway and tee divots are filled by hand with sand dyed to match the undamaged adjacent turf. Every lake, creek, bunker, and path is perfectly trimmed. There are no weeds anywhere and few plants of any type grow with anything less than perfect symmetry. Even bunkers are expected to provide a level of consistency that suggests we

should reevaluate their classification as hazards according to the Rules of Golf.

Such perfection on the golf course is perhaps justified for those with large maintenance budgets. For those who seek to keep golf affordable, there are many options to reduce the cost of maintenance. For example, instead of hand-raking bunkers four to five times per week, labor hours can be greatly reduced by machine raking twice per week. Of course, this assumes that golfers will actually smooth the bunker after their shots and that they will once again recognize the fact that bunkers are indeed hazards. Another labor-saver is to reduce the mowing frequency of roughs that seldom come into play. On most courses, there are many acres of such areas. Granted, although there probably are few places on any course that sooner or later will not be hit by someone, the saving in fuel, labor, and equipment justifies the effort. As stressed earlier, keeping trimming to a minimum can also significantly reduce labor hours. Although frequent trimming of bunker edges is

important to define the boundaries of this hazard, lakes and creeks need not be so manicured. By staking and painting the water hazard boundary well away from the edge of the lake or creek, the player is able to quickly determine whether or not the ball is in the hazard. To speed up the search for lost balls and still reduce labor hours, trim only the portion of the hazard that frequently comes into play.

Trim work can further be reduced by utilizing herbicides instead of labor-intensive line trimmers around trees and alongside boundary fences. By using a combination of non-selective and pre-emergence herbicides, the interval between sprayings can be greatly extended. Since line trimmers do provide a more manicured look, consider their use only around the highly visible areas of the course such as near the clubhouse.

Regardless of the choice of grass for the greens, placing less emphasis on speed can save money. In many parts of the country, those interested in affordable golf must recognize that the quest for lightning-fast greens is

counter-productive. Quite simply, it is much more expensive to maintain extremely fast greens than those of a more moderate pace. Greens rolling 7 to 8 feet on the Stimpmeter can provide very enjoyable playing conditions to golfers of all levels. Such speeds can be produced at higher cutting heights, which invariably result in an overall healthier turfgrass plant. Healthier greens require less intensive care and are far less prone to failure of all types.

Irrigation System Design

Like the greens, the irrigation system should not be compromised in terms of quality. Irrigation systems are critical to the success of most courses in this country. Like almost every aspect of golf course construction, the cost of purchasing and installing an irrigation system has risen dramatically in recent years. With today's heavily computerized systems and the trend to wall-to-wall coverage (where virtually every area of the course is irrigated), it is not uncommon for the cost of the irrigation system to exceed \$1 million.

Again, as when building greens, the key to saving money on the irrigation system is to reduce quantity, not quality. Component quality (including the heads, controllers, pipe, and pump station) should be nothing less than first-rate. However, great savings can be realized by reducing the total acreage irrigated. In some areas, very low-cost manual heads can be employed in roughs that require a minimum of supplemental watering to survive dry periods. This is particularly true when the roughs are planted to water-efficient

turfgrasses. Most courses have many acres that seldom come into play and therefore need little if any supplemental irrigation. If future expansion of the system is anticipated, the pipe sizing and pump station can be designed accordingly.

The degree of control of individual irrigation heads also affects the cost of the system. Hilly courses with a variety of turfgrass species being employed require a greater degree of individual head control and result in higher installation costs. In contrast, courses that can utilize block designs (multiple heads controlled by a single valve) in large turf areas such as fairways and key roughs can realize significant savings. In areas of the country where the cost of water is high, computerized control systems often result in tremendous savings. However, in parts of the country where water is more plentiful, the control package can be less sophisticated and significantly less costly.

Design and Build Courses That Can Be Easily Walked

Another means of making golf more affordable is to design courses that can be easily walked. Unfortunately, many of today's courses are designed under the assumption that virtually all the players will utilize riding carts. Vast distances often separate the green and the following tee, taking the enjoyment out of walking the course. Some courses even prohibit walkers altogether in order to generate greater cart revenue. Obviously, revenue is important and it is a fact that many players prefer riding to walking. However, on

courses that are conducive to walking, players can save \$10, \$15, or even \$20 per round simply by hoofing it. Assuming the goal is affordable golf, this simple step has a tremendous impact on the player's pocketbook.

Conclusion

All of these suggestions will result in significant savings in the construction and maintenance of the golf course. If these savings are passed on to the golfer in the form of reduced green fees, more people will be able to enjoy the game—even during less favorable economic climates. However, it is very important to stress that many of the suggestions will result in a reduction in the overall appearance of the facility. While a high level of playing quality can be maintained, the course that is designed, constructed, and maintained in an economical manner will seldom compare favorably in terms of appearance to those facilities with deeper pockets. As a result, one of the most important aspects of achieving the goal of affordable golf is the willingness of the golfer to accept significantly less than perfection in terms of course conditioning. Fortunately, this does not mean the game itself must be any less fun or challenging—just less expensive.

JIM MOORE is Director of the USGA Green Section's Construction Education Program. Based in his office in Waco, Texas, he scours the country for new technologies and maintenance practices that can help to make golf more affordable.



Without question, it is more expensive initially to build a green properly, but well-built greens are good investments that will provide years of reliable service. This benefit more than justifies their initial expense.