

Penalties Give Way to Strategy In Modern Golf Course Architecture

By Cal Olson

Some golf course architects are determined to have a naturally contoured look on the course they design—no matter how many tons of dirt have to be trucked in to achieve it.

Students of the game, avid golfers and professionals who have visited or played the original seaside courses dating back a century or more, might believe that nature is the best golf course architect. Probably no one who has studied the old courses would disagree with this.

Unfortunately, there are only so many available sites endowed by nature to be properly picturesque. With the popularity of the game growing yearly, we need to have many courses in areas where nature has not been so bountiful.

Enter the golf course architect with his multidisciplinary talents. Where nature has failed, he must succeed. It's seldom easy, but that's what he gets paid for.

Golf course architecture is constantly evolving. Older, penal golf design is giving way to a strategy approach with the recent trend toward links-type courses. Water is increasing on the newer courses for a number of reasons including aesthetic ones. This evolution coincides with the development of equipment, longer balls, and improved horticultural practices.

Golf course design varies with the site and the inherent natural resources. It also varies with the architect providing the design.

The terrain might start as a flat area with no special features, or it could be a hilly forest area with streams meandering throughout. The architect must work with both and make his best attempt to create a natural setting if at all possible.

Golf course design varies by the type of course. Public courses, private courses, resort courses, championship or tournament courses all have unique design considerations. Each variable requires a different approach to routing, hazards, strategy, and maintenance to best accomplish the goals and end needs of the average user of the course.

It is the responsibility of the golf architect to create the difficulty and strategy of a course based upon the expected users' talents and to generate interest and desire in the golfer to play the course many times to discover each subtle nuance of the design. This particular



Improper irrigation design is evident on this new course, the center of a multi-million dollar real estate project. The obvious pattern in the turf will cause maintenance problems and golfer dissatisfaction.

talent in golf architecture requires the architect to be a student of the great courses and to understand the techniques and mysteries of this subtle element.

There is no rule that says which hole is a par 3, 4, or 5 — only that the course should play in an interesting fashion and work with the available land. The course should be arranged so that the first hole or two is of medium difficulty and par is not too difficult. To quote Robert Trent Jones, "A good design would make par demanding and a bogey comfortable." The design should be such that play moves rather quickly and players do not have to wait at any tee to continue play. The game should be able to be played in 4½ hours or less to further enhance the enjoyment of golf.

In other words, the course design should not be too easy, yet not too difficult. Players should not be penalized for a good shot, nor should they be made to face blind shots or unwarranted hazards. When a golfer makes a great shot only to get penalized, his anger is justified and should be directed at the golf architect.

Routing—Variety is the key to good

routing. There should be an equal number of dog legs left and right and straight-aways. If wind is a factor, routing should be varied so the wind has different effects on various holes throughout the course.

A long linear course that follows the wind one way and against it the other way is less interesting than routing that intermixes every hole or every other hole with differing wind conditions.

Hazards—The term hazard is a misnomer because hazards can create beauty, protect golfers on some holes, penalize errant shots, and challenge the golfer. Hazards are a large part of the aesthetics of a course, and aesthetics bring the golfer back again and again. Beauty instills a positive memory of the course often replacing any bad memories.

The other item that brings golfers back to a course is challenge. The challenge of a course is relative to the golfer's ability. The architect must understand this to create a course most suited for the targeted clientele.

A 5,600-yard course with moderate hazards might present a challenging yet enjoyable round to the golfer with a 20 plus handicap. A 6,500-yard course is

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challenging to the avid golfer. The scratch or professional golfer seems to find only 7,000-yard plus courses challenging to his skills.

The top golf architects are able to satisfy golfers of all abilities in one course. This is done by designing numerous tees for each hole; situating hazards to challenge all golfers; and making penalties in proportion to the risks taken.

Some of the newer courses have very few, if any trees. Trees can provide beauty and depth perception to the golfer. They can also serve as hazards or provide protection for golfers on adjacent fairways and tees. Good architects use a variety of trees to provide a palette of colors pleasing to the golfer's eye.

Links style courses are generally devoid of trees. Since golf courses should fit into the natural surroundings, a links course would not be appropriate for a wooded area.

Water, because of its soothing effect on golfers, is being used more and more by golf course architects. Streams, large and small ponds and waterfalls all add to the enjoyment of golf. Long after one has taken a penalty in the water, he will remember the peaceful experience of the water and return again to challenge it.

Water features are among the finer elements of a course, except when they appear to be forced into the design, seem unnatural, or their location makes a hole too difficult for the expected user.

Sand bunkers are not unlike water features. Care in assuring proper placement and the proper type and depth of bunkers is important. Again, the expected talents of the golfer must be considered in placement and design.

Bunkers should never penalize an excellent shot. Sand areas can intimidate a high handicapper even to a higher degree than a water hazard. The placement of sand bunkers can be used effectively to direct the intended shot, provide depth perception and challenge for a great shot to a green, penalize an errant shot, and contribute to the beauty of the course.

Municipal, country club, resort and championship courses all require different strategies and placement of bunkers and different degrees of difficulty of the bunker. Generally speaking, municipal courses will have fewer bunkers to help speed up play. Country clubs have quite a few bunkers with a lesser degree of difficulty than championship courses, but their location does not overly penalize the golfer.

Resort courses are being developed with championship quality, with heavy use of sand and water hazards. These hazards are placed to provide championship quality from the back tees, yet average challenge from the regular tees. Championship courses are well-bunkered to challenge the best players.

Grass bunkers are very effective and add a dimension to the golfing challenge. Country clubs, resorts, and championship courses all utilize a combination of sand and grass bunkers. All bunkers must receive proper drainage.

Contouring—Interest, challenge and beauty are all incorporated into great courses by the architects ability to sculpture the grounds with contours that are pleasing to the view, without presenting too much difficulty.

Such contours take special attention from the architect and superintendent regarding proper drainage and irrigation. Mowing, maintenance, and fertilization programs may all be affected if the slope is not correctly analyzed.

Many flat course sites have been sculptured by moving millions of cubic yards of earth to create a "natural" setting with smooth transition of grades.

Irrigation—Golf course irrigation systems are relatively simple to design, yet there is a difficulty factor in establishing ultimate control and efficiency. Approaches to irrigation design and maintenance vary greatly.

Years ago manufacturers provided design services for golf courses to help sell their products. The competition being very great, the manufacturers tended to stretch the design to utilize fewer and fewer heads to win the job. Modern design by private consultants and golf architects utilize a general spacing of 65 feet on center to provide the best uniform coverage, although this does vary in regions. The manufacturers either compete at this level, or in most cases, it is specified on the plans by the designer.

The key to irrigation on a golf course lies in four areas: control, flexibility, water conservation and maintenance. Other considerations are soil, water quality, water availability and budgets.

Irrigation systems, whether battery type or valve in head, require separation of control. The tees, roughs, fairways, greens, nursery, etc., must all be separated for complete control. Golf course superintendents work with the architect to develop a system compatible with management objectives. Fresh water systems are frequently utilized for syringing in systems with reclaimed water.

Computerized controls are being installed on most golf courses being developed today. These controls effectively lower the total water use, maximize the efficiency and control pumping power usage for the operation.

The hydraulics of the system, generally looped, require that the designer provide computer calculations modeling the recommended programming schedules, fertilization schedules and syringe schedules.

Most golf courses receive their water for irrigation from an irrigation lake. The reason generally is that the golf course

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Landscape architects must often take a site without inherent natural beauty, haul in truckloads of sand or soil and shape it and plant it to provide a natural setting.

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water requirements for the irrigation period are very high and would burden most distribution lines with a pressure drop at best.

The golf course lake can receive the water over a 24 hour period at a lower flow to facilitate the higher demand of the 10 hour irrigation operation. This requires that the lake be designed for the proper storage and allowable "draw down" during irrigation.

A potentially aesthetic lake can look very unpleasant when the lake is near empty after morning irrigation, and is not full again until late in the afternoon.

Tees and Greens—The tees and greens, as the starting point and ultimate target, are probably the most memorable part of any course. The tees should be constructed to stand the abuse they receive from players. The size should be sufficient to move the tee placements and allow the turf to regenerate.

Four and five pars should have 4,000 to 6,000 square feet of teeing areas and three pars up to 7,000 square feet. Four to five teeing areas should be allowed for each hole to provide interesting alternatives, length of hole variations for the different golfing abilities, and turf regeneration.

The greens, the ultimate target and the essence of scoring, must be constructed properly. The United States Golf Association (USGA) has provided standards that have proven to be quite successful. Variations from this can only lead to ultimate dissatisfaction.

The USGA specifications call for the subbase to be constructed with drainage tiles, gravel, sand and seedbed mixture.

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The actual green shape, contouring, size, etc., is the responsibility of the golf architect. The size of the green can range from 4,000 to 8,000 square feet or even larger in some instances. Pin placement studies and golf hole strategy come into the final decisions regarding size.

The contour of the green should never be overly severe. Rather, it should be such that a well-struck ball would not receive a penalty. The "greensite" area includes the green and its immediate surrounding. The total design for the greensite should incorporate automated maintenance whenever possible. Dimensions should be calculated to ensure cross mowing without extra difficulty.

Practice Areas—Every course of any quality has an adequate practice area. The avid golfer requires practice and warm-up prior to playing. The design and placement of the practice area should not endanger players yet be close enough to the clubhouse for access.

Further Considerations—There are a multitude of considerations when designing a golf course. Items to consider fur-

ther are: *soil*—as it affects grading, drainage, irrigation, and turf species; *water*—as it affects the quality and quantity of turf species in irrigated areas; *maintenance*—actual maintenance programs, actual maintenance facility requirements, and how they affect design; *budgets*—how they affect the final outcome; *clubhouse areas*—how they affect the design and space allocations; *dimensions*—actual dimensions that are acceptable as minimums for design of the golf holes; *grading*—balancing the earthwork; *field time*—how much field time is required by the architect; *future*—allowances for future considerations, etc.

It would take an entire book to adequately assess the golf architect's philosophy. Every golf architect would in fact have his own particular methodology and philosophy.

What are the hidden secrets of great golf course design? They are really the result of understanding all the elements of the game, appreciating the varying ability of the golfing public, and having skill as a land planner, artist, engineer, landscape architect, and conservationist with intimate knowledge of the theory of golf.

As we progress to better golf architecture, we are confronted with problems that are increasingly interdisciplinary in nature. Besides understanding golf architecture, the golf architect should be qualified in all disciplines that affect the ultimate in golf design. ▶

Editor's Note: Cal Olson is a land planner, civil engineer, landscape architect and water conservationist based in Newport Beach, Calif. He is considered an expert in irrigation and lake design with 25 years of experience.