



by Cameron MacKellar

## Decision-Making in Golf Course Design

To paraphrase an old saying, “I can’t define good golf course architecture, but I know it when I see it.” This comment stresses the difficulty that is often found in evaluating the merits of a good golf course. What is it that destines a course to be considered “a top 100,” or even an example of good golf course architecture? Is it the setting? The beauty? The challenge? All magazine rankings aside, there must be a reasonably objective framework that distinguishes a well-designed golf course.

Is the success of a design the result of following the basic principles and applying them to each project? Simply put, yes. However, therein lies the difficulty of golf course design. Assembling these principles to create an original, quality playing field while dealing with unforeseen conditions and ambiguous details is the challenge. Countless choices must be made. Each architect has a signature framework with which they assemble the choices that determine the golf experience.

### Providing a Personality

Golf is like no other sport. The dimensions and characteristics of an individual golf course change over the span of its lifetime and the differences between golf courses are infinite. Each is separate and unique with distinct personalities and characteristics. Each reacts singularly to different golfers, varied weather or different times of the year. Golf is unique in this respect.

The average golfer sees the course as a sequence of par 3s, 4s, and 5s that total a par of, or around, 72. Tee locations, green sizes, depth of bunkers, turf types, and water hazards all provide the personality of a golf course, a personality that is the result of the architect’s vision. Generally, golfers can “sense” the atmosphere of the golf course or “feel” the dread of a hazard, but rarely understand why.

A good golf course architect will use existing site features to develop the character and flavor of the course. Much like a good meal or enjoyable music, the strategic, visual and textural golf experience lingers long after the event, leaving players fulfilled and satisfied, neither wanting nor overwhelmed. A golf course is the product of a golf course architect’s ability to successfully integrate his artistic creativity, scientific knowledge and golf acumen into the landscape.

### The Art of Golf Course Design

A golf course should be considered a work of art in that it has a unique and discernable theme, structure, and style. Artistic design theory is one of the reservoirs of knowledge

from which a golf course architect draws. Unity and variety; line, form, and color; scale and composition; foreground and background are all considerations of the designer.

The trick is to make the parts fit the whole. It’s easy enough to have good, solid, individual ideas, but the real challenge is creating a coherent, well-integrated experience. Taking clues from the site and its surroundings makes the architect’s job more effective, efficient and ultimately more inspirational.

### The Routing Plan

The routing plan should reflect and expose the best of the site features without theatrics and without convulsion. Golf holes should have variety, but should feel like they belong within the family of 18. Changing bunker styles, drastic or distracting topographic features, inappropriate locations for water or improperly sized tee surfaces can ruin the aesthetic and detract from the golf experience. The outcome will be better if an idea springs from the landscape, rather than affixing an idea or image to it.

The site characteristics, the client objectives, the target market and client budget will determine how a project will evolve. A great site dynamic will allow more efficient use of materials and a better routing plan. The natural systems of the site, such as woodlands, wetlands, floodplains and water-courses, will affect the physical layout (routing plan) of the golf course as well as the impact on the functional elements of the design.

### Constant State of Refinement

The golf course architect is constantly gauging the site resources with the client objectives and the budget while offering plan and detail alternatives. The architect is in a constant state of plan refinement, seeking solutions and alternatives to reach the goals. Choices must be made, often dozens at a time, affecting the budget, strategy and function of the golf course.

For instance, relocating a green by 30 yards may save thousands of dollars, while adding to the golf experience, but at the expense of a stand of mature oak trees. Adding a bunker may cost money, but visually and strategically stimulate the golfing public. A water feature is proposed at a far corner of the site, but offers little strategic or aesthetic value. These and many other considerations face the architect during design and construction.

There are numerous aspects of related professions that golf course architects should have a basic understanding.

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Hydrology, drainage, agronomy, turf grasses, physics, geometry, civil engineering, soil sciences, botany, psychology and natural systems are all part of the training. Decisions in each of these disciplines are inherently linked to other parts of the golf course, giving it its personality and life.

For instance, existing soil conditions will determine the extent of drainage systems and soil amendment requirements. Weather patterns and topography will determine the necessity for irrigation requirements and turf types. Turf types will be determined by soil conditions and available water. Available water and budget will determine grassing limits as well as the pumping station requirements.

The quality of a golf course is equally affected by the materials underground as it is by the visible portions of the facility.

### **Underground and Unseen**

**Drainage and Hydrology** – Poor hydrology can be the greatest shortcoming on a golf course. If the course lacks a sound drainage network then, at worst, there will be areas of standing water making the course unplayable or, at best, soil conditions that cause weak or diseased turf.

Quality drainage systems and shaping can never be compromised. The value of positive "at grade drainage" is not measurable. Directing water to the appropriate locations for collection and ultimate release is generating a great deal of attention due to more stringent environmental factors and regulations.

Wetlands, floodplains and mitigation are all terms that are more regularly spoken during design and development. While golf courses have been blamed for environmental problems in the past, golf has been an environmental benefit far more than a detriment. Golf courses can solve a host of environmental problems with buffer zones, storm water management and wildlife habitat establishment.

**Earthwork and Grading** – In order to adequately create the features that must be created for greens, tees and bunkers, earth must be moved. All architects attempt to reduce the amount of "Mass Earthwork" as much as possible. So, what is appropriate for good design? That answer is as tricky as a flop shot over a creek from a hardpan lie.

Earthwork movement should directly reflect the intent of the architect balanced by the site needs and landscape environment. The golf course architect has to constantly assess earthwork quantities. To create a mound or raised area in one place he must in turn create a hollow or swale in another, all the time making it look as natural as possible.

Further, it is important to balance earthwork to smaller, adjacent areas to reduce the costs of hauling.

Then there is the possibility that in creating a depression in one area you inadvertently cause a drainage problem and must then install underground drainage infrastructure, which can also prove costly. Again, shaping and grading must accomplish the golf-specific goals while providing for the functional movement of overland and underground drainage systems.

**Irrigation** – Irrigation is costly and should be designed in concert with the ultimate goal so that water distribution is adequate and consistent. However, it is widely understood that irrigation systems are designed with a "worst case scenario" in mind. The irrigation system must be developed to provide water during the most difficult times of the year, July and August, and pumping systems and head distribution is determined with an extended dry period in mind.

### **Conclusion**

What draws us to golf? Is it the game, the camaraderie, or the interaction with nature? It is all of the above. The most compelling aspect of golf is the infinite variety of possibilities during play. The personality of a golf course is greatly determined by the architect with the routing plan, as well as the details of the functional and golf specific matters.

The game was meant to be enjoyed with friends, recreating more than competing, and enjoying nature. It can rejuvenate our senses. This is a gentleman's game with a proud legacy. It should be accepted as a difficult game to be enjoyed. Therefore, it is incumbent upon the architect to make the game as enjoyable as possible for as many people as possible. Some courses need to be tougher, and others less devious. However, the great golf course design debate is not about risk and reward, but rather about playability and difficulty.

A golf course with no features or challenge will not engage the better golfer. Therefore, it is the goal of every architect to create a valuable golf experience that will challenge everyone to a degree equal to his or her ability. Each project and each site requires distinct choices and a different tact to implement the appropriate level of challenge, recreation, quality and beauty. Good golf architecture is not swiftly identifiable, but it is most certainly felt. ♣

*Cameron MacKellar is International Project Director for Martin Design Partnership. He can be reached by calling (630) 482-2532 or email c-mac@mdpltd.com.*