Multi-disciplined approach to planning and constructing is essential

By A. JOHN HARVEY

Today's golf course developer can face a seemingly endless approval process, which begins with finding a site that has the right physical attributes. The best parcels of land on which to lay out a golf course include diverse topography and vegetative cover, and on these lands, one usually finds an array of soil types, watercourses, surface waters and wetlands. In these times of environmental awareness, the desire for a great site that is comprised of these features comes with the challenge of a myriad of local, state and federal environmental regulations.

The irony is, the best land for golf course design is often riddled with bureaucratic red tape.

In the most heavily regulated locales, and in extreme cases, a given site can have wetlands jurisdictions based on various criteria such as vegetation, soils, hydrology and habitat, leaving a site with as many as three distinct wetland delineations. If the site includes enough acreage, and its natural features are environmentally sensitive, the easiest way to work with wetlands is to avoid them. This is the "Party Line" of the regulatory agencies. However, the natural landscape is comprised of an infinite number, arrangement and complexity of wetland configurations. Much of the earth's landscape is compartmentalized by wetland systems, isolating non-wetland land forms into irregular sizes and shapes. Therefore, strict avoidance is not always an option.

John Harvey

The golf course architect's mission is to route the best layout with the fewest impacts possible. Where the plan comes into conflict with regulated areas and avoidance is not entirely feasible, the project design team becomes complex in the effort to meet the project's goals and objectives while standing on an environmentally sound premise. Such a team must include the golf course architect, along with a civil engineer, surveyor, ecologist, archaeologist, hydrologist and turf grass scientist, all of whom must wrestle with the site plan to get the best golf course given the site's constraints. Evaluating the options to solve problems frequently results in compromise on both sides of the aisle, leading to numerous iterations of the preferred route plan. Through this iterative process, the team must find a course that is a good, playable, challenging and a fair test of golf, while also being environmentally responsible.

Many regulators do not play golf or have any knowledge of the general principles and traditions of the game. It is important for the architect and design team to meet with the reviewing agencies during the planning process to fully explain the rationale for design concepts and to educate the environmental decision-makers about golf and the project's necessary impacts. Field walks are useful to show agencies the design on a hole by hole and impact by impact basis, but the process is also a two-way street.

The designer also must have an understanding and respect for the intent of the regulations. It is important for the architect to listen to the regulators during the planning process, especially on the field walks. Many times critical issues are casually discussed on site and the design team is able to "read" the reactions of the agencies to particular impacts, and find solutions to specific problems.

Once people reviewing the project start to understand the game and the architect's objectives for certain impacts, the designer is more likely to find that his/ her plan moves forward in the regulatory process. However, as can often occur, when the designer feels modifications cannot be made without significantly jeopardizing the quality of the course, the team must recognize the need to provide additional justification for the proposed impacts.

Wetland impacts are strictly defined as grading or filling. This is where a portion of the proposed course requires excavation or filling of existing wetlands to meet the needs and dynamics of golf hole design. Often, a layout proposes filling slivers or fringes of wetlands. Rarely is it necessary to completely fill or excavate large segments of these resources.

Other potential wetland impacts need to be evaluated, including tree canopy removal, flooding and habitat conversion. Tree canopy removal is achieved by hand clearing vegetation down to an often ne-

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A.John Harvey is a member of the American Society of Golf Course Architects and a design associate with The Roger Rulewich Group in Benardston, Mass.

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gotiated height, in order for the golf hole to offer the player an unrestricted line of sight from one side of a wetland corridor to a target on the other side. This is called a "play-over" or "forced-carry". The height of vegetation to remain is based on the topography within the wetland floor and the shot required to and from the surrounding up-land golf area. These areas require a program of on-going maintenance by the superintendent and ecological consultant to ensure future playability of golf holes while maintaining wetland quality. Flooding of a wetland means exactly that, raising the water elevation, to create or enhance a water hazard or irrigation pond. Habitat conversion means altering an existing wetland from one type to another. For example, digging out a portion of a marsh to create open water or cutting trees from a forested wetland to make a shrub swamp for play-over.

The process of negotiating these activities can be costly and time consuming for the developer, sometimes taking several years.

If the project requires wetland impacts, it will be necessary for the development team to perform an alternative site analysis. This is a study of similar parcels of land, on the market or privately held, within the project vicinity which meet the program criteria of the project. This can be an exhaustive task that identifies whether these tracts of land can serve as the site for the course. Often they can be eliminated one by one, but on rare occasions, they qualify.

When the regulators eventually agree on the proposed site and golf course layout as supported by scientific, golf and artistic documentation, then on-site mitigation for environmental impacts is the measure used to compensate for alteration of the site's existing wetlands. This is the last resort offered by environmental law. Many states have a predetermined mitigation ratio for various types of wetland impacts, such as grading, filling, tree canopy removal, flooding and conversion.

Building mitigation areas must be dovetailed with the site's earthwork and the phasing of the project, in order to be properly built and adapted to the site's substrate, local hydrology and golf. The ecological consultant is the key team player in producing detailed construction and planting plans to create a wetland.

Equally important is the earthwork and shaping contractor's experience in not only moving earth and shaping golf courses, but also constructing wetland mitigation systems. Once the project is completed and fully grown in, the mitigation areas must be surveyed and inspected to ensure compliance with the permit conditions that require fully functioning and successful wetlands. The ecological consultant and permit authorities closely monitor this work.

The transition areas between wetlands and open-water areas are strictly regulated, with jurisdictional setbacks that can extend inland from 25 to 200 feet, representing additional planning obstacles. These buffers vary from state to state and wetlands to wetlands, depending upon the resource value of the particular ecological system. For example, trout streams typically have wide buffers attached to their corridors. When a golf course layout may affect the habitat that supports a protected species it is necessary to prove to the agencies why tree clearing and grading within these buffers is required to meet the playability demands of the golf course.

Wildlife habitats that are truly sensitive are quickly becoming a tricky regulatory issue in site planning because the resource is difficult to quantify and qualify during the site inventory, research and documentation phase. This, and wetlands, issues will be two of the most difficult tasks facing government, the scientific community, and the developer in years to come.

In order for the developer to receive permission to commence construction of a golf course on an attractive, yet sensitive site, he or she must assemble a highly qualified, multi-disciplined consulting team that can assist the golf course architect in producing well conceived and scientifically supported plans. This can be an expensive and time consuming process, but it is essential for successfully planning and building a golf course in today's environmentally aware society.