

Sound construction methods prove the most cost-effective

By RICKY J. KROEGER

All new golf course entrepreneurs recognize the necessity of completing construction of their golf course with a minimum of costs. Avoiding excessive construction costs can mean that enough money remains to allow construction of a more elaborate clubhouse area, or better yet, to decrease the amount of investment necessary.

Although architectural opinion vary regarding the creative strategies and artistic values which stimulate golfers to return over the life of a course, it should not be forgotten that few will return if the course is not green and playable. The three critical physical factors affecting cost-effective maintenance—soil, drainage and irrigation—have interrelationship sufficient to confuse most investor/developers and many golf course operators. In fact, few golf course architects sufficiently recognize the agronomy and hydrology necessary to minimize operational expenses after construction. If the architect cannot explain (or the investor/developer will not agree to provide) the necessary soil, drainage and irrigation relationships for a given course, there is a real likelihood of excessive maintenance costs in the future. Soil, drainage and irrigation problems, when built into the golf course, require the type of capital outlay that few new courses can afford after opening.

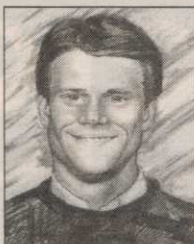
Looking back, it often becomes painfully clear that the solution was available during construction at a minimal price. Better to pay back a loan over seven years than to pay an annually increasing expense forever. Better still to avoid building in these problems from the beginning.

THE SOIL

The best soils for a golf course are not always available on the site. Be certain the architect you bring in to discuss your project has a true agronomic background. Although most soils can be managed to adequately support golf turf, the expense of doing so varies greatly. Careful consideration must be given to adapt the irrigation and drainage systems to the existing soil system. These two factors strongly affect the day-to-day expense of course operations. While sand may drain well, it requires very

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uniform distribution of water by the sprinklers to avoid dry, brown, dead areas (which is turn demand money and labor to repair!). Clay, however, drains very poorly and requires very uniform distribution of water by the sprinklers to avoid wet areas (which are costly to drain later!). Compaction of the soil during construction and use of



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the course after opening must also be considered as a significant factor which will affect the cost of maintenance.

DRAINAGE

Any one involved in a golf course construction project should recognize that nature may intervene at the worst possible times during construction and establishment. Wind and water must be considered

from the initial planning of the course in order to minimize the negative financial impact of which these forces are capable. Most important, the speed with which excess water is controlled and removed from the soil significantly impacts the profitability of the project and its annual operation.

Excess water is a foe capable of eroding profits. It causes courses to choose between closing to avoid damage (disrupting cash flow) or risking

the expense of repairing the damage caused by players. Unfortunately, grass does not stop growing during wet periods—on the contrary, it grows all the more. Mowing equipment used at this time causes compaction, rutting and the resulting losses in playability.

Drainage systems do not need to be expensive to work. They must, however, be well conceived and effectively built. Skimping on this vital element during construction will mean that one must eventually either

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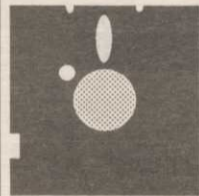
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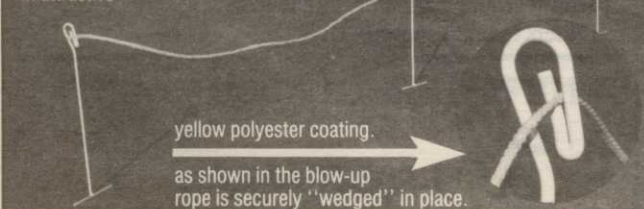
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Kroeger comment

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increase the maintenance staff (with attendant increasing costs) or accept lower standards of playability and risk loss of income.

IRRIGATION

The demand for water is directly influenced by soil texture, soil salinity, monthly rainfall, irrigation water quality, the total irrigated turf and landscaped area, air temperature, relative humidity and grass species. The architect of the course must competently consider all of the above factors, as well as the source and availability of water at all times of the year, when designing the total watered area.

The engineering involved in designing an irrigation system includes every square meter of irrigated area on the property. It starts at the water source and does not end until the water leaving the sprinklers lands on the ground, uniformly distributed so as to eliminate wet and dry areas. The quality of the installed system is often gauged by its ability to:

- Operate efficiently using locally available skill levels of labor and supervision
- Evenly distribute water over the wide range of golf course conditions
- Accept additional sprinklers in the future
- Allow individual control for sprinklers in a specialized situation
- Operate over a given season with few repairs or maintenance costs

State-of-the-art irrigation equipment which is appropriate for the specific region may appear expensive, but it has the ability to repay the additional costs from savings generated. One such component is the fertilizer injector, which is used to inject liquid nutrients into the pipeline at the pumping station, eliminating the need for frequent trips across the course with tractors and spreaders. At US \$10,000-20,000, they pay for themselves within a few years through labor savings, reduction of equipment-related damage and the shorter time period from seeding/stolonizing to opening of the course.

Typically, dollar driven reductions in the irrigation, drainage and soil systems erode future operational profits. The new golf course entrepreneur in the process of a pre-construction cost control review would do well to utilize the experience of the architect's staff agronomist, or an experienced golf course superintendent, before finalizing the construction budget.