THE FIRST OF TWO PARTS

Documented irrigation plans define your absolute functional necessities

By LARRY RODGERS

A well-written irrigation plan, like a construction blueprint, instructs users on how to create the best system for their exact needs. The plan reflects current course watering demands, as well as irrigation requirements 20 to 30 years in the future. It defines pressure zones, sprinkler coverage, electrical wiring, communications cable routing and a host of other essentials.

Perhaps most important, the plan specifies the absolute functional necessities of how your station affects the total irrigation system.

Absolute functional necessities. What does that mean? It translates simply: Your irrigation plan should tell you in complete detail exactly how your pump station must perform to appropriately irrigate your course. Further, it explains what components and features that station must include to meet those performance levels.

As an irrigation designer and consultant who has worked on more than 300 golf courses around the world, I can say with great confidence that ignoring or misunderstanding pump station specifications is one of the worst mistakes course owners and superintendents ever make. And, allowing that to happen is one of the worst mistakes a consultant ever makes.

Pump stations lie at the heart of every irrigation system, and are one of its most complicated components. The best irrigation piping and sprinkler heads available make no difference without water. Simply put, the pump is the heart, the piping is the arteries, the controls are the brains, and the sprinklers are the muscles.

Consider this example: A golf course project in Indonesia receives its set of pump station specifications. Two pump station manufacturers submit bids. One follows the plan exactly and returns with a price. The other insists it can reach the performance standards without precisely meeting specifications and offers a lower price.

The course owners accept the lower bid. A dark comedy of errors unfolds, highlighted with problems like the following:

• Key station components are missing. The manufacturer blames the local dealer for their absence. The local dealer cuts all ties to the manufacturer

Continued on page 13

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Golf should take the initiative & beef up environmental principles

By ERIC S. HOWARD

The Environmental Principles for Golf Courses in the United States — voluntary guidelines for golf course design, construction and management — were presented at the March 1996 Conference on Golf & the Environment [*Golf Course News* March 1996].

While the Principles are an important step in the right direction, they could have gone further. For example, buffer zones are called for in sections dealing with development. But the focus is on a narrowly defined component of environmental protection, rather than buffers having environmental and social benefits that far exceed the ecosystem benefits. Environmental guidelines should be seen as living documents. As golf course managers review these principles and begin to implement them in collaboration with their local communities, some amendments will certainly be necessary.

The Principles for Golf Courses are one of many national and international efforts aimed at reducing the environmental impact of recreation and tourism. In 1995, investment for travel and tourism in North America was more than $100 billion, and the capital investment is expected to grow significantly here as well as in Latin America, Asia and the Pacific during the next decade. A host of hotels and resorts will be built, requiring infrastructure and associated development.

For the golf industry, this will mean more opportunities to build courses and more opportunities to manage and maintain them. While environmental guidelines or codes of conduct used by businesses or industry associations are often shorter than the Principles for Golf Courses, they may cover a broader set of issues [see box].

Continued on page 12

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Rogers comment: Irrigation plans

Continued from page 11

and refuses to respond to the course's questions. The owner is stuck with a system that can't be operated;

• Power conditioners for the irrigation satellites were left off the bid. Now, owners must hire a private electrician to purchase and wire a stabilization system;

• Instead of following the initial specification that called for the pumps to be built and shipped in 5-foot sections, pumps arrive in 20-foot sections. The shafts are bent during shipping and no one will take the responsibility to fix them;

• Programmable logic controller (PLC) control software was provided on the station without an operator interface. Now, simple adjustments, like setting the correct default values or modifying design pressures create major headaches. The owner must get the manufacturer to re-burn the existing microchip and wait for it to be shipped from the United States;

• And, the list goes on.

What's the punch line? These nightmarish problems could have been avoided. It all starts with knowing and following your pump station specifications. Pump station vendors or local manufacturers can always find ways to short circuit specifications and show a lower up-front cost. However, the shorter, cheaper route may turn out as the longest and most expensive venture you can undertake.

Take my advice:

The plan and specifications should be written in plain English; avoid techno-jargon. They should include information on issues like U.L. (Underwriter's Laboratory) approved, and explain exactly who the Underwriter's Laboratory is and what it means for equipment to be given that approval.

Simply taking boiler-plate specifications from a manufacturer/assembler is a mistake because they were written around equipment they sell which may or may not meet the projects needs.

Navigating the plan/specifications: There are 10 to 20 items of significant importance to review. It's important to ensure they are part of the final manufacturer's bid submission.

Some of the most important sections focus on items such as: variable frequency drive (VFD) and the software to operate it, including operator interface; industry-standard testing and the agencies that evaluate components, U.S. N.E.C., Uniform Plumbing Code, ASME, NEMA; warranty, including issues like what it does and what it does not warranty, who determines what is covered, training for end-user, etc.: the pumps themselves — what style, what components, what speed, local service, support for system 5-15 years down the road; the motors; metal components; structural supports; surface preparation before painting; valving; in VFD, manufacturer, enclosure rating, short circuit protection and series of electrical components.

Next month, we'll discuss items to focus on when navigating the plan specifications.

Blackwolf Run in Kohler, Wisconsin, features two 18-hole Pete Dye-designed championship courses.

Beautiful landscaping and attention to detail define both the Blackwolf Run golf courses and nearby 5-diamond-rated American Club hotel— both owned by The Kohler Company.

This Norwegian farm building was disassembled, numbered, and shipped to Blackwolf Run to serve as a rest station.

Principles

Continued from previous page

broad commitment in the Precepts to "using natural resources efficiently."

Use reduction should be the primary focus, followed by re-use and recycling. Waste management also needs a stronger statement on following applicable laws and regulations and on limiting the purchase of agrochemicals, in particular pesticides, to the amount needed in order to reduce the amount of toxic chemicals amount stored on-site.

A means for recognizing environmentally proactive courses may be useful as well, analogous to the Blue Flag program for beaches in Europe or the Green Leaf program run by the Pacific Asia Travel Association.

Such recognition should be linked to formal adoption of a formal environmental management system by each individual golf course that would integrate sustainable development into the entire business operations, thereby assuring that actions to implement the program are carried out on the greens, in the clubhouse, and in conjunction with the community and other stakeholders.