

# IRRIGATION SYSTEM INSTALLATION

AT GULFSTREAM GOLF CLUB

by STANLEY A. CARR

This article is similar to a talk given at the 1977 South Florida Golf Course Superintendent Meeting. The information that I shall give is not totally my own. Moreover, we would not have the fine system that we have today had our general manager, Jim Briggs, not done a lot of research and worked closely with me. These comments and recommendations generally refer to an installation on an existing golf course.

Gulfstream was built in 1921 on approximately 140 acres, of which one hundred acres are irrigated.

It is of utmost importance that a superintendent employ or have on his staff a representative to work with the irrigation contractor. It is virtually impossible for the superintendent to closely monitor the installation of the system and run the course operations at the same time. This representative should have a basic understanding of plumbing, pumps, electric controls, etc., with the prospect of being the irrigation specialist after installation of the system has been completed. Many clubs are reluctant to employ such a representative just to oversee the work done but when you think of buying a quarter million dollar system, it is very inexpensive insurance indeed. This representative should see that no pipe is placed into the ground without his inspection and that no deviations from the blue prints or specifications are made without direct consultation and approval from the superintendent. As our club president once said, "the superintendent has to marry the girl." Basically, this is what we did at Gulfstream Golf Club, and I feel we have one of the finest systems available.

Listed below are some suggestions and recommendations that might prove helpful to anyone installing an automatic irrigation system:

- 1.) Determine the amount of acreage to be irrigated.
- 2.) Have a topographical map made of entire area to be irrigated.
- 3.) Check and select the source of water to be used.
  - a.) pond
  - b.) well fields

The water supply is of extreme importance and should be studied thoroughly.

- 4.) Have a colored aerial photograph of the course taken and keep in the superintendents office to be used for reference work between the superintendent and the contractor.
- 5.) Take soil samples of the types of soil and or rock to determine possible problems on installation by the contractor.
- 6.) Check for prevailing wind directions and favor location of sprinkler heads toward wind.
- 7.) Determine the number of hours the course is available to irrigate.
- 8.) Can any part of existing manual system be used in order to reduce costs. At Gulfstream I decided to abandon the old system completely.



- 9.) Determine spacing of the heads, whether they are to be installed in triangular or square spacing, a more even distribution of water will usually be accomplished with a triangular placement.
- 10.) Decide upon an electric control system or a hydraulic system. Electric usually has more problems in this area due to electrical storms and will cost more to install.
- 11.) If your course has a course architect on a retaining basis it will probably pay to seek his advice.
- 12.) Specify electric wiring for control clocks to be installed on right hand side of the irrigation pipe and the hydraulic tubing to be installed on the left side of the irrigation pipe. This will help in locating tubes and wires in case of repairs.
- 13.) Specify depths of all installations
  - a.) consider pipe size.
- 14.) Specify color coating for electric wiring.
- 15.) Identify locations for all field satellites being sure to have the ability to see the heads operating and if possible to be kept from the sight of golfers.
- 16.) Future expansions should always be considered at the time of installation.
- 17.) Specify **poured concrete** thrust blocks at all dead ends and tee-joints.

Generally speaking some contractors place CBS blocks at these connections, however, I personally feel that poured concrete should be insisted upon.
- 18.) Divide your course into sufficient zonal areas so that certain areas can be taken out of service for repairs without interruption of main irrigation system.
- 19.) Include a rock clause for both the contractor and the club.
- 20.) Provide lightning arrestors on all satellites.
- 21.) Consider the installation of the rain gauge coupled with a shut off relay to cancel the central control.
- 22.) Be sure to specify types of satellite
  - a.) Zero to 30, or zero to 60 minute timings.
  - b.) Automatic and manual operation.
- 23.) Establish sequence of clocks to operate from greens back to tees.

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- 24.) Specify that no wiring, tubing, or piping shall cross over one another.
- 25.) Have contractor install snap valves at the back of each green and at the back of each tee.
- 26.) Use clay valves to regulate pressure in lines.
- 27.) Specify to speed heads in problem areas and have circle heads for perimeter irrigation.
- 28.) Do not allow any splicing between controllers and be sure to use scotch-locks for electrical connections in satellites.
- 29.) When gluing, specify all joints be glued **one** day before installing.
- 30.) Make sure that all piping is installed with slight curves to allow for expansion and contractions.
- 31.) All swing joints and risers should be prefabricated in a clean working area and not on the field.
- 32.) Specify that no more excavation or trenching is to be done in a day that cannot be restored.
- 33.) Specify electric wiring feeding satellites be in conduit for a minimum distance of six feet from satellites (this will protect wiring entering controllers from mechanical damage).
- 34.) Specify twelve (12) inch concrete pads for satellites.
- 35.) Determine the need for a filter system to ensure clear water from source of supply.
- 36.) Decide on sprinkler head types — gear or impulse drive.
- 37.) Establish work commencement and completion dates of installation and decide upon penalty of performance (bond posted).
- 38.) If applicable check into the cost of hook up to city water.
- 39.) Request contractor to specialize his crew so that the same man is responsible for the same function throughout the installation.
- 40.) Demand a performance bond.
- 41.) Demand insurability and certification of contractor.
- 42.) Set up reasonable progress payment schedule retaining 10 percent for performance insurance.
- 43.) Designate responsibility for restoration of underground utilities damaged by installation.
- 44.) Require an "as built" drawing showing all locations of heads, controllers, valves, wiring, piping, drains, etc., to be brought up to date each week. This "as built" should be precise using bench marks for ease for identification and location. This is extremely important and vital and in many cases a failure of some installers.
- 45.) Require a one-year warranty and guarantee on all parts, equipment and workmanship.
- 46.) Demand balancing and adjustment of the system in the field to yield the greatest uniformity of irrigation. This is to be done by contractors in the presence of the course superintendent.
- 47.) Specify location for central control — suggest superintendent's office (in some cases under superintendent's bed).
- 48.) Specify adequate instructions of golf course personnel and use of new system.

I hope that this information will be helpful to those contemplating installing a new irrigation system.

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