



The fairway watering system installed at the new Southern Hills CC at Tulsa, Okla., assures a springy turf—and more enjoyable golf—regardless of the weather.

# HOW YOUR CLUB CAN INSTALL FAIRWAY WATERING

**FAIRWAY WATERING** is becoming an urgent problem to those clubs that have not made installations. Usually the directors go at the fairway watering subject with only a general idea of what is wanted and suffer delay in getting a sharp focus on the problem as it applies to their own club.

For that reason we set forth the major questions that almost every club finds that it must consider and answer before it properly can find the solution to its fairway watering problem.

It is beginning to be realized that, unfortunately perhaps, turf growth is not the only factor in fairway watering. There is the matter of course color, which may be decorative effective advertising for the club, and mechanical conditioning for easy walking, and—in the case of greens—watering so approach shots will stick. Probably the latter factor has been responsible for a vast amount of turf injury and extravagance because of member demand for over-watering which the greenkeeper knows is dangerous. But he can only make a feeble and futile protest against the powerful, although ignorant demands of the dub who wants every shot to hold the green.

Watering involves enough problems in co-ordinating turf requirements with the exacting demands of members to make it highly important that whatever system be selected, it be one that will not add unduly to the maintenance and operating worries of the greenkeeper. The greenkeeper should be present at all delibera-

tions concerned with the mechanical details of systems under consideration.

Golf courses are coming to the simple, sound fact that easy walking or springy turf provides the most enjoyable golf with far less fatigue. No more dust—no more dirt-caked shins—no more exhaustion from pounding over fairway after fairway of hard, unyielding soil.

Here, then, is a practice which influences the design of water systems, confounds turf authorities with new problems, and focuses attention more strongly than ever on question No. 1.

**Question No. 1.—How can we raise money to pay for a watering system?**

Special financing has furnished funds for most every new water system during and since depression. Few clubs have had surplus funds—and assessments for improvements have been out of order for years. Details of financing vary widely; note these recent examples.

A. A resort club borrowed on plain notes and will repay from green-fees.

B. Mortgage terms permitted the use of sinking funds for permanent improvements.

C. Accumulated "caddie tax" funds.

D. Loans from members to be paid from caddie tax collections.

E. Donations, field day proceeds, gambling parties, plus "caddie tax" fund.

F. Cash on hand, plus assessment of \$10 per year for three years.

G. "Greens tax," is painless method of raising funds from those who directly benefit.

Each club must meet its money raising problems according to its own conditions and memberships. The caddie tax and greens tax plans appear to be the plans suitable for general use at golf clubs.

A caddie tax, from 10 cents to 40 cents is charged on every 18-hole caddie ticket and on the greens tax, 10 cents to 25c per round. The funds so collected are segregated for special use, along with funds from other sources. The green-committee usually administers the fund. This caddie tax plan was adopted some years ago at Fresh Meadow. Since then quite a few clubs have made good use of this plan. It meets with little or no opposition and places the burden exactly on the players and in proper proportion. Such plans, initiated by vote of the board, are a substantial basis for subscriptions and loans for water improvements. If there be a painless, or near-painless method of raising special funds, either for direct use or for repayment of advances, it is one of these two methods.

#### Question No. 2.—Hose or hoseless system?

Half a loaf is better than no loaf, and a hose system is better than no system. Hose systems never were efficient. With this newly developing demand for easy going, which means more frequent watering, the hose systems are vanishing except at the smaller clubs. The good word which can be said for hose systems is that they automatically prevent over-watering. But good management will not over-water, and a hoseless system will use 20% less water than a hose system for the same area.

#### Question No. 3.—What will a water system cost?

The cost varies from course to course by thousands of dollars. The total cost depends largely on whether a water supply exists or must be provided, whether a pumping plant must be installed, whether a temporary hose system or a hoseless system is selected, and whether the construction is skimped to reduce cost (at the

expense of excessive operating expense for labor).

Adequate hoseless fairway systems today cost from \$7,500 to \$12,000 for 18 holes. Pumping plants from \$750 to several thousand dollars, or even more for a plant with automatic control. Wells or reservoirs cost from a few hundred dollars to many thousands. Most hoseless projects today are running from \$9,000 to \$16,000, total, according to the nature, and extent of the facilities required. Materials and labor are on the rise, so these figures are not likely to be lowered for adequate constructions. To determine the cost of the water system a competent plan should be prepared and an estimate secured. If the water supply is not determined, this should have first consideration.

#### Question No. 4.—Where is the water coming from?

To a large extent the answer to this question affects the answer to Question No. 3, because the wide variations in total cost are almost entirely due to the cost of providing the water supply and raising it to suitable pressure.

Rivers and lakes are the best sources, and obviously the cheapest; impounded brooks are cheap and often adequate; impounded surface run-off may do, shallow wells of good capacity are usually cheap and dependable; city water is often expensive but very dependable and free from grief; deep wells are usually most expensive and certainly least desirable. (Clubs are structurally unsuited to deal with all the complications and risks of deep wells, except as a last measure to obtain water.)

At many clubs there is no choice of water supply. At others there are two, and occasionally three, possible sources of water, requiring careful weighing of all factors to determine which source to employ.

#### Question No. 5.—How much water per season?

This depends upon how much water nature supplies. Tees, greens, and fairways, for 18 holes, require from 12 million to 20 million gallons per year in the bluegrass belt, and far more in the southwest and far west. The average clubhouse uses from 4 million to 8 million gallons per year (300 members). The fluctuations from year to year are extreme; both for the same clubs, and for different clubs in the same locality. Each club must work out its own water usage.

In the absence of rain, one inch of pre-



Modern fairway watering system has kept this fairway at Fenway (N. Y.) CC in excellent shape throughout the dry spell.

precipitation, more or less, per week, is sufficient except during extreme weather in July and August when the requirement often reaches  $1\frac{1}{2}$  inches. Even more is needed in regions of extreme climate. One inch of water spread over one acre equals 27,000 gallons. Mowed fairway areas of an 18-hole course vary from 42 to 54 acres. Tees, greens, and lawns range from 3 to 6 acres, or more. The weekly requirement should be estimated for each individual course. The range is from 1 to  $1\frac{1}{2}$  million gallons per week.

**Question No. 6.—How often is watering necessary?**

It depends upon soil and climate, and the extent to which the demand for easy walking has grown. Every other night, every third or fourth night, or even every night.

Frequency of applications and depth of each application can be arbitrarily set by the system designer according to available facts, but in last analysis this question will be best answered by the greenkeeper, after several months or even seasons of operations. Good turfing and the water-holding capacity of the soil may indicate one frequency of applications, while the prevention of surface caking and the desire for easy going may necessitate more frequent applications.

**Question No. 7.—What should be the capacity of the system?**

Experience at many courses indicates that the system should have a capacity of at least 1 inch of precipitation per week of 48 hours. A system of this capacity will

meet all requirements except in the far west, southwest, and in a few isolated cases.

**Question No. 8.—What is the order of procedure in dealing with watering system?**

Clubs come to grief by "getting the cart before the horse." It is important to proceed correctly from the water requirements to providing the water—then the sprinklers—next the pump (if any)—then the piping system. Some pipe manufacturers now are making sizes, lengths and fittings especially suited for golf irrigation.

This matter of procedure is so important that we repeat it in more detail—because failure to follow this order causes irrigation projects to fail to give satisfaction.

First: Find out how much water is needed.

Second: Determine the source of water and the possible rate of flow. There can be no irrigation until this is settled.

Third: Select the type of system, the sprinkler pattern, the sprinklers to be used, the operating pressure, and the total rate of flow per minute.

Fourth: Determine the pump and power, if needed.

Fifth: Plan the piping system and outlets to give the greatest possible efficiency.

**Water Volume**—Olympia Fields CC has been using 2,000,00 gal. of water a day on its four courses during the drought, according to green-chairman Lee Sawyer. Courses are in superb condition.