

CURING DRAINAGE ILLS

PART 2

Last month, Ream told what faulty drainage does to greens and offered advice on correcting and preventing part of these miseries by means of surface drainage. In this concluding instalment, instructions are given for laying drain tile properly to handle sub-surface drainage.

THE system of drainage which is most popular and perhaps the most efficient is called the herring-bone system. In this system (illustrated in Diagram I), the main is laid through the lowest portion of the slope, following the general direction of the slope of the green, with the laterals staggered into it at angles from each side. If the laterals are 20 feet apart, there would be a lateral entering the main from opposite sides every 10 feet along the line. The laterals should run into the main not at right angles but at an angle in the direction of the flow.

Diagram 2 shows a situation where the green slopes in two directions. The main is placed at the lowest point of one slope and runs in the direction of the other, with laterals coming into it at angles, from both slopes. The main runs in the direction of the greatest slope.

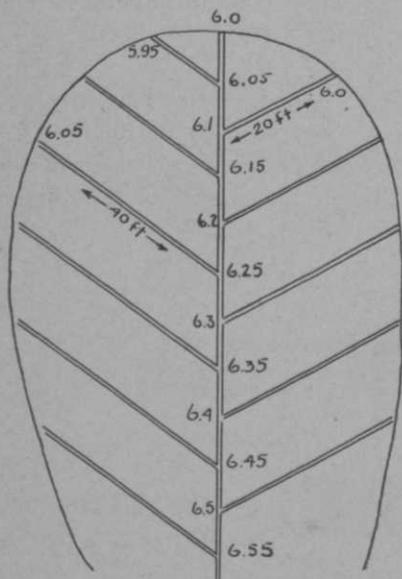


Diagram I. Herringbone type of drainage, with laterals staggered and evenly spaced.

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If the tile is being put in without any other modification of the green, the lines can be laid out, and the sod raised over the areas where the tile is to be placed. In digging the trench, the soil should be piled along the side, on canvas or tar paper to protect the turf. If the green is being rebuilt, the tiling operation should not begin until the final grade is obtained. In re-

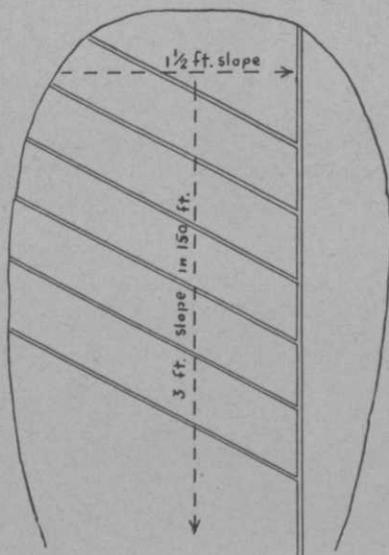


Diagram II. Where the green slopes laterally as well as from back to front, this type of drainage is used.

building the green it is well to improve the soil condition, working in as much peat and sand as necessary to make a soil of ideal physical condition. As was stated before, the physical condition of the soil has a great deal to do with the drainage properties, so that anything which can be done to improve the soil conditions at the time of rebuilding will tend to make the most optimum condition of drainage.

Don't Trust to Guess

As soon as the final grade is established, the green should be studied to decide the system to be used and the placing of the lines. The eye should never be

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trusted to carry a grade, but some mechanical leveling device should be used.

Readings should be made first to determine the lowest portion of the slope of the green where the main line is located. Grade stakes are placed at both ends of the main and at intervals of 10 feet along the main, if the system is herring-bone and the laterals are to be spaced 20 feet apart. Starting at the highest point of the main, the grade stake is pounded down about an inch above the soil and the reading taken. If the fall is to be 6 inches in 100 feet we would have a fall of 0.1 feet in every 20 feet or 0.05 feet in every 10 feet. Let us assume that the reading at the first stake is 6.0, then the reading at the next stake 10 feet away should be 6.05, the next 6.1 and so on. (Shown in Diagram 1). There is an increase in the reading figures of .05 feet for every 10 feet. When all grade stakes are set on the main line, the laterals are measured off at intervals of 20 feet on each side of and staggered so that there is a lateral entering the main from alternate directions at each grade stake, or every 10 feet. The angle at which they enter should be less than a right angle and approaching a 45 degree angle. The laterals on each side of the main should be parallel to one another. The laterals should start outside the edge of the green, so that if the tile lines become plugged and the ends have to be opened up to push a cleaning rod through, the turf will not be disturbed.

Accurate Grading Needed

The grade should be determined at the point where these laterals begin, by measuring the distance between that point and the grade stake where they enter the main, allowing 0.1 feet for each 20 feet. (See diagram). Grade stakes should be driven in to the correct readings as was done on the main line. We must now get some device to guide us in digging the ditch to the correct grade. Probably the best method known is termed the Line and Gauge method. Stakes of 2 in. x 2 in. material 4 ft. 6 in. long are driven down at each grade stake so that their tops are 3 ft. 6 in. above the grade stake. A line is stretched along the top of the stakes.

The main line should be dug first and then the lines stretched from the ends of the laterals to the point at which they are to enter the main. This line will show the grade of the bottom of the ditch and is

just 5 feet above it, if the tile are to be placed 18 inches below the surface. If they are to be deeper, the depth should be subtracted from 5 feet and the stakes carrying the line driven in so that they are that distance above the grade stake. The edge of the ditch should be about 6 inches away from the grade stakes, so that the line will not be in the way while working. A gauge is made in the form of a capital L upside down. One arm is 2 feet long and the other 5 feet from the end to the lower part of the horizontal arm. The grade of the bottom of the ditch is obtained by placing the end of the upright part of the gauge on the ditch bottom and noting whether the horizontal arm touches the line. When the underside of the arm just touches the string, the ditch is on grade. Care should be taken to see that the gauge is held vertical or some error will result.

For Ditching

Hand Labor Is Best

The ditches should be dug by hand and a good tiling spade provided. The last part of the ditch should be taken out with a ditch cleaner, which shapes the bottom of the ditch to fit the tile. The tile should be laid with a tile hook, or by lying down and placing them in the ditch by hand. Walking in the ditch spoils the shape of the bottom and walking on the tile moves them out of position. The tile should be placed close together as possible, and any wide joints should be covered with broken pieces of tile.

The ends of the laterals at the edge of the green and at the starting point of the main line should also be covered with pieces of broken tile to keep the soil from entering them. It is also a safeguard in sandy soils to place an inverted tough sod or piece of tar paper over the joints. In order to prevent crumbling in of ditches or sinking of fill, the tile should be packed with cinders to within 8 inches of the top in clay soils, and 1 foot in sandy soils. If the green is to be sodded or planted, a few inches of soil should be placed on top of the cinders and watered down thoroughly, adding a little more soil and watering it down. This procedure should be repeated until no more settling is noticeable. It is important that this method or some similar one be used to settle the soil before planting, otherwise depressions will be found where the tile lines are laid.

THE MAKERS SAY . . .

UNITED STATES RUBBER CO. comes up with a golf ball Christmas deal that will do business for pros this year. There are three sizes of boxes; for 12, 6 and 4 balls. The boxes are striking, beautifully designed jobs, made of gum wood, cedar-lined and finished with a brilliant Christmas red lacquer that stands out and adapts itself to any color scheme.

For cigar and cigarette humidors for men and as trinket boxes for women the boxes have a strong appeal and utility. A wide range of U.S. balls is offered. In the 75c balls there are US Royal-Spun Latex, US 444, Royal P.G.A. Championship, Royal P.G.A. Tough Cover; and the US Fairways in the 50c class.

Suggested retail price for the 75 cent balls packed in the dozen size gift boxes is \$9.75; in the six ball size, \$5.00 and in the four ball box \$3.50. On the 50 cent US Fairway the retail prices suggested are \$6.75 for the dozen ball box; \$3.65 for the six ball box and \$2.50 for the four ball box.

Pro margins on the Christmas packages are good, with the pros getting the packages for less than they cost US.

"An important thing about this Christmas ball selling," says E. C. Conlin, US Rubber golf ball sales manager, "is for pros to get started early and to put special attention on sales to their members who are corporation officials. These men do much gift buying for their employees and business friends. Shopping is a problem to them and their pro can get into their offices when other salesmen would find entry almost impossible.

"The pro profit from effort and brains on the Christmas boxes comes in at a time when most pros can use money. It's a field wherein the pro shouldn't put off his work but ought to start strong early in November."

WILSON SPORTING GOODS CO. again sets before the pros a combination of Christmas selling packages for golf balls that ought to score even stronger than the Wilson gift line-up last year and that went to town for the live boys. There were pros who sold Wilson balls up to the 100 doz. mark with the 1934 Wilson ball Christmas package proposition.

One Wilson Hol-Hi twelve ball gift package is a handsome box for men in which cigars, cigarettes, handkerchiefs, dress jewelry or other knick-knacks may be stowed. This box has, in addition to the balls, three sports handkerchiefs. Another Hol-Hi dozen ball deal has six handblown