Palm Beach Trade Winds

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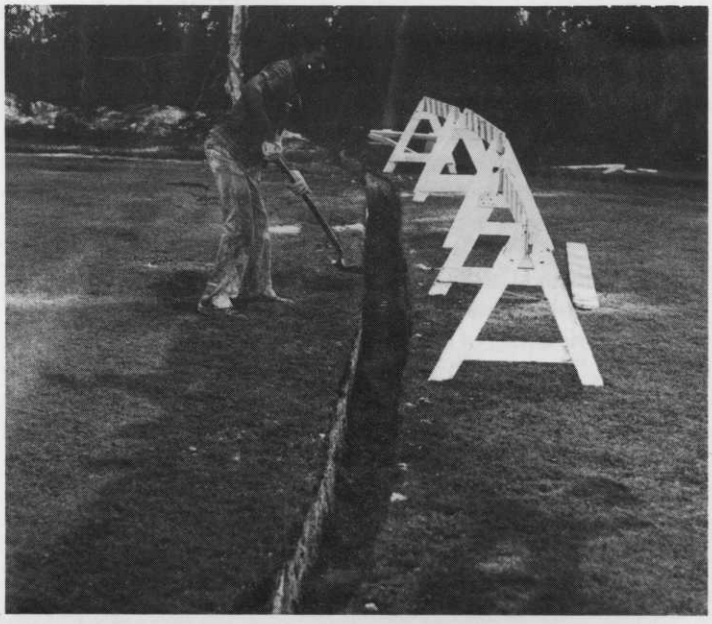
Geologists generally regard Florida as being nothing more than one humongous sand bar. Golf Course Superintendents can concur with such thoughts, as we all find golf courses to be excessive in sand content. When one thinks of sand, one imagines of a soil that is coarse in particular size, poor in nutrient retention, and excessive perculutive rates with virtually no water holding capacity. However, as we discuss the problems associated with sandy soils, it seems peculiar that most all of us experience some sort of wet areas with poor drainage on our golf courses. That brings us to the topic of drainage and the ways of ridding excessive water in an enviroment where most golfers are usually unsympathetic of our dilemma.

The reasons for poor drainage are generally a direct result of the extremely flat native land. Man-made lakes and canals are excavated to create landfill for the contours of tees, fairways and greens. It is here the problem begins. Sub strata layers varying from fine silt to coarse coral rock are reconstructed whereby your Excedrin begins. Do you have mounds of dryness where irrigational means fail to produce adequate moisture, however at the base of the mound excessive moisture produces a condition of being desert like to swampland within the distance of just a wedge shot.

Because everything is not perfect, we find ourselves forced upon a situation of modifying soil conditions in order to agronomically produce sound turf within such varied conditions.

As I began my evaluation on the type of drainage projects and their respective rates of success, there is one golf course that has employed a unique concept that is producing playable golf conditions with the ability to maintain quality turf, even though the course received 129 inches of rain last year and is found deep within the woods of Cypress and Malelucas, synonyms for soggy soil. That golf course is the Banyan Country Club where certified Golf Course Superintendent Dan Jones has shared his concepts with me for this article.

There are regions of the golf course where water run off must travel hundreds of yards to nearby lakes and canals. Such long linear distances with less than a 1% elevational pitch obviously results in wet areas. Dan Jones has cured the problems of long runs by a practice of calculating the correct pitch within a given distance and then installing a pump, a device similar in nature to a lift station commonly found within the design of sewer systems. He can then pump the water from its lowest given point back up to a respective subsurface elevational pitch to once again have enough positive drain to draw the water on down the line to a given run-off area such as a canal or lake.



Upon a recent visit, only one day after a heavy rain, I found the course to be open, heavy with play and only minimal moisture as compared to standing water of previous history. Jones has evaluated the many designs for drainage whereby the process of elimination and going a little above and beyond has created a design of exceptional results. First of all, Jones cites, "Don't just go out with a trencher and insert some drain pipe down in the ground, cover it over with some rock and assume all your prob-

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lems are over." Jones feels the basic key to success is to create a trench of proper width and depth to collect the ground water. Jones insists upon a backhoe attachment which can be coupled to the back of an existing tractor for the employment of digging. A width of 12 to 18 inches is important as compared to a typical 6 inch width of just a trencher which can age faster and produce only short term results. As you are digging the trench, pull a dump truck next to the backhoe and haul off all the excavated material offsite. Jones states, "If the soil wouldn't perc before, why push it back into the trench"—instead haul it away and refill with the proper type of soil, more specifically; Coarse DOT Type Trap Sand.

Once the trench is dug with the proper 1% elevational pitch (See Fig. 1), then the design of the drainage hole itself begins to be revealed (See Fig. 2). Place a 3 to 4 inch depth of rock on the bottom of the trench bed. A filter cloth material bought in rolls of 14′ x 1200′ are cut literally in half to create (2) 7′ x 1200′ lengths. Place the blanket within the walls of the trench and again place 3 to 4 inches of 1″ drain rock within the blanket. Next the ADS Drain Pipe with holes located all the way around is placed into the middle of the trench. (The sock type cover is not used because the filter cloth accomplishes the same purpose with a less chance of clogging because of a greater circumference surface area in the filter cloth.) Then rock is placed totally around the pipe to 3 inches above the top of the drain pipe, thereby encasing the drain with a column of rock. The filter cloth is then dropped over the top to overlap and seal the drain rock within. Coarse DOT trap sand is then filled to the top of the remaining trench line whereby sod is placed as the icing on the cake. Even the type of sod can make a difference. Jones states, "Make sure you buy a sand base grown sod rather than a muck base, as yes, the muck hinders initial water penetration."

Now that we have analized the cross section design of the drain trench, let us now analize the linear distance of the lateral drain. The given pitch can only go for a certain percentage of a distant drop. The second key of the design is employed which ultimately makes the project "drain so well". A sump pump is placed at the end of a given line. The water is pumped upward to a satisfactory subsurface pitch to have enough positive pitch to drain again. The pump operates on a float valve which automatically turns on when the well fills up with water. Electricity was run from a nearby source. The amperage draw is minimal while design of such can last for years. The concept of an automatic float valve virtually eliminates any need for care and supervision. Jones showed me the pump which immediately brought to mind of several locations of where I plan for future projects. Any of us who have, lets say two or three holes of parellel design, such as the case at Banyan: the driving range, and holes #1 and #18, the system will definitely pull excessive ground water a distance of approximately 300 yards. When golfers consider the facts of such flat land coupled with the astronomical amounts of rainfall that we can receive, it seems amazing that we are even able to play golf, not to mention any such high quality golf courses.

With innovative concepts of the discussed drainage work that are successfully working throughout the golf industry, I believe we can be proud of such fabulous results considering we are usually not engineers, however -we are instead...Golf Course Superintendents.■