

MINIMUM ALLOWABLE GRADES FOR TILE DRAINAGE LINES

By C. E. Stewart

The excess rainfall received in 1957 in the Chicago area revealed numerous low spots in many golf courses where water ponded and many superintendent's found it necessary to remove this water by installing drain tile in 4", 6" or 8" in size depending on the extent of the area to be drained. In some instances it was found difficult to get sufficient pitch, or slope, for the new tile lines.

In suggesting the following minimum slopes for such tile lines it must be borne in mind that a considerable amount of silt and sand wash into the line, and although catch-basins should be provided to retain the silt, it is also necessary for the drainage water to flow through the tile at a velocity which will keep the silt in suspension and prevent it from settling on the bottom of the tile and eventually to a point where the tile becomes blocked and useless. A water velocity of 3 feet per second appears to be the minimum velocity when silt is kept in suspension and which would prevent it from settling in the tile. To obtain this minimum water velocity the following formula is suggested for 4", 6" and 8" lateral tile lines:

$$100 \\ 5 \times D \dagger 50$$

D being the diameter of the tile in inches.

The above formula indicates that the *minimum* slope in feet per 100 lineal feet is as follows: —

Inside diameter of tile in inches	Minimum slope in feet per 100 lineal feet
4"	1.40 feet
6"	1.30 feet
8"	1.10 feet

The *maximum* grade is of course limited only by the surface slope of the ground.

OUR APOLOGIES

It seems that in our last issue there was an article on Oscar Borgmeier's golf game. Oscar was pretty much upset about it, claiming that breaking 100 was no problem to him and that he had lost face due to the statement that he hoped to break 100 regularly by the end of the summer. Now we see our error and want to retract the statement and publicly apologize to Oscar. Your Editor was brought up to respect his elders and wants in no way, manner or means to hurt any of them if he possibly can. Oscar, if it will make you feel better, we hope you will soon be shooting below 80 and will go a little further and hope some day you will be among the select few who can shoot their ages.

The cool weather in June has given the superintendent what you might call a "vacation" from troubles, however, all good things must come to an end and with the lush growth of grass and the hot weather to come, be on the alert for all kinds of trouble.

Jim Holmes says that much of turf trouble in the summer months can be attributed to the weakening of turf earlier in the season by disease.

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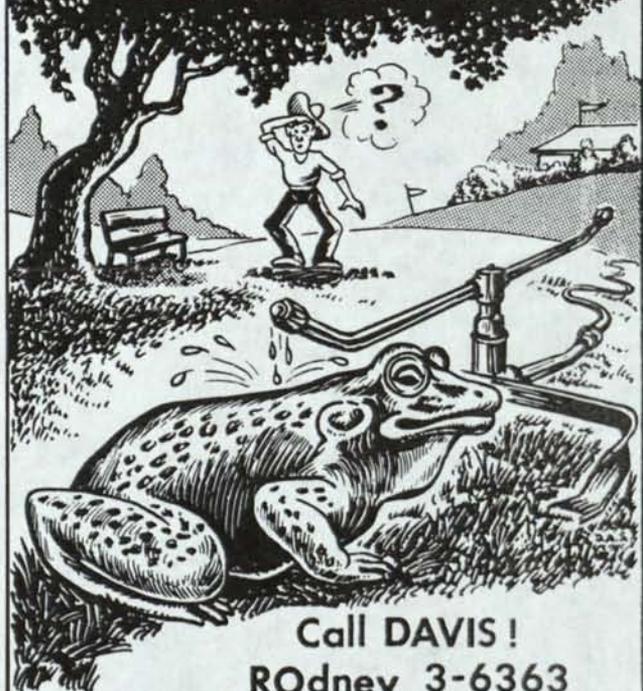
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