

ATHLETIC TURF DRAINAGE

David Heiss
Drain Technology, Inc.
Spring Lake

Historically, sports-turf managers have attempted to drain their facilities using agricultural drainage practices. Fundamentally, it is wrong to use agricultural drainage on sports turf, since the objectives are different. The farmer stays off his ground when it is wet and he can till his soil on an annual basis.

Literature published in the late 30's suggested a system for athletic-turf drainage utilizing narrow columns of sand having known infiltration rates and mathematically proven lateral movement of water along the columns of sand. By the late 50's and early 60's, practical equipment was being developed to effectively install these columns of sand. The term "by-pass drainage" is often used to describe the system, since water does not pass through the soil, but rather, by-passes it by moving through these columns of sand. Columns of sand .75 inch wide are closely spaced together, ranging from 13 to 40 inches apart, depending upon the need to drain the respective soil and site. These columns are relieved of their water by 35mm tile that cross at right angles on a 40 to 60 inch spacing. The tiles are placed in an excavated trench not exceeding two inches in width, the small tiles are then emptied into four or six inch lines that act as collectors. Effectively then, a grid system has been installed, based on mathematical equations, utilizing known values. A predictable rate of excess water removal can be stated using this system.

By-pass drainage has several distinct advantages. Namely, it is mathematically predictable, allowing for guaranteed water removal. By-pass drainage is an ideal retro-fit system that can be installed without tearing up an existing turf surface. Due to the narrow columns of sand utilized, turf grows over quickly and does not create drought-stress lines during dry periods. Finally, this system is low cost. The disadvantages of the by-pass drainage system is that it requires highly specialized equipment for proper installation. Installation has to be absolutely precise or a perched water-table effect is created, which actually retards rather than improves drainage. Finally, sand selection is critical and requires good lab testing procedures to insure its predictable qualities. The concepts described are not experimental but are proven on numerous turf areas, some dating back to the mid 60's.