A dream of a field

Drainage system key to successful field renovation

BY PARKER WOOD

Howard Gamble is varsity baseball coach at Skyline High School in Oakland, CA. He's held the position for eight years, and for most of that time he was a man with a problem field, built on clay soil, that never drained properly. When winter rains arrived, the field turned to mud, and it was anyone's guess as to when it would dry out. Poor field conditions put an end to routine maintenance, and forced most preseason training sessions to be held on the school's outdoor basketball courts. Early season games were often moved or rescheduled for the same reason. To make matters worse, the field had been graded to promote surface drainage, but instead the slopes and contours led to a deep depression and a large drain inlet in center field-an accident waiting to happen.

For years, Gamble dreamed of a better field. Neither the school nor the district had funds for renovation. The same was true for the team's booster group. Gamble even talked to the city's parks and recreation people, but they responded that the field was on school district property, making it ineligible for city assistance. Gamble had all but given up when, suddenly things started to go his way.

An anonymous donor approached the city wanting to contribute money for improvements to several athletic facilities, if the city would match the gift. Through lots of hard work, Art Yamashita, supervisor of park special programs, and Al Garcia, facility project analyst, confronted the problems presented and solved them.

Yamashita had remembered Gamble's request for help. He and Garcia spearheaded the work at Skyline, which took several months to complete. The scope of the project included: killing the existing turf; capping and burying the offending drain inlet; ripping, disking and regrading the field; putting in new irrigation; installing a sub-surface drainage system; erecting a new fence; adding new infield mix; and installing new sod. The City did much of the work using its own personnel and equipment and contracted out the rest.

Early on, Yamashita and Garcia realized that improved drainage would be critical to the project's overall success. As they evaluated their options, Yamashita remembered a seminar he had attended where the concept of Sand Channel drainage was discussed. He was reassured to learn that, among other places, Sand Channel drainage had been used successfully at Stanford Stadium, and as part of the renovation of the football field at Colfax High School, the Sports Turf Manager Association's 1999 High School Football Field of the Year.

Renovation work began in October 2000, and the Skyline field was finished in time for Gamble's team to play three home games before the end of the 2001 season. Coach Gamble noted a number of positive changes he attributes to the renovated field and the new drainage system:

- His outfielders' level of play improved after they quit worrying about slipping and falling.
- The players have a lot more pride in their field, which means they have a lot more pride in themselves.
- Pride in the field spurred the players to be more proactive when it comes to keeping the field in top-notch condition.
- The improvements to the field have motivated greater community involvement, which Gamble is sure will lead to increased support for the team.

Yamashita characterizes the outcome of his and Garcia's efforts as a "win-win-win" situation: The school district got improvements to two of its athletic fields, the city got improvements to one facility and an agreement that they could use the school district sites for city programs, and the kids of Oakland got better and safer facilities for both school and city-sponsored activities.

As for Coach Gamble, for the first time he can remember, he isn't worried about what his field will be like next February. He's confident he'll be able to use his field, right from the first day of practice. Where once he was a coach with dreams of a field; now he's a coach with the field of his dreams. ST

Parker Wood is director of marketing for Sand Channel Greens, Inc. He can be reached at 800-379-8873.

Weathering the storm

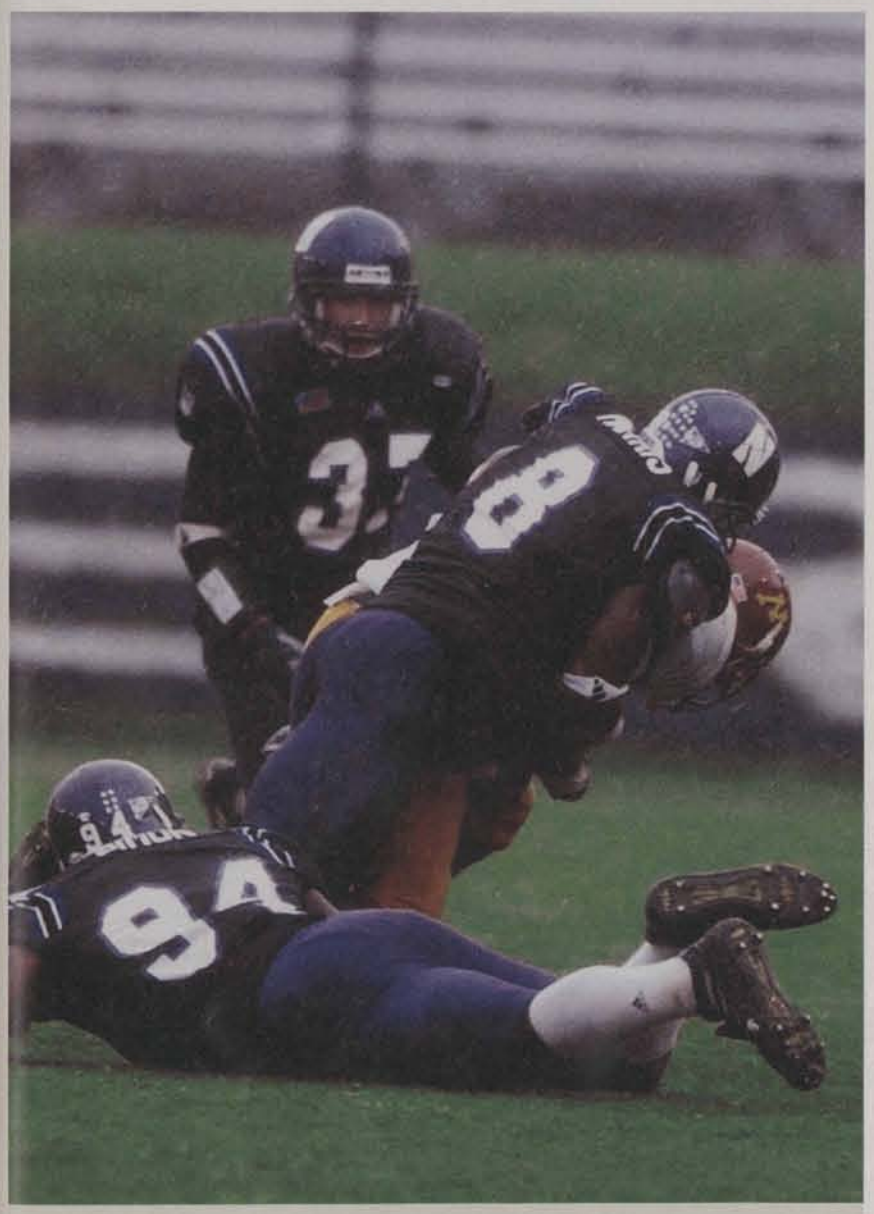
BY NATHAN ODGAARD

Though the rain continued to fall—heavier as the game progressed—Eric Adkins remained relatively calm.

Adkins, an agronomist at Northwestern University in Evanston, IL, watched with uneasiness, but confidence, October 13 as Ryan Field took a pounding from both Mother Nature and the Northwestern and University of Minnesota football teams. Storm cells produced steady, at times heavy, rain that drenched the field 1 hour before and nearly the entire 3 1/2-hour game. In that period, the field collected 2 inches of rain.

Ken Kraft, senior assistant athletic director, said the rain briefly stopped on a couple occasions, but otherwise, "It was just a mess. The rain got heavier and heavier throughout the game. At times it was coming down in sheets."

Panic-stricken? Not Adkins. Renovations to Ryan Field in April 1999 (the 2000 Collegiate Field of the Year by the Sports Turf Managers Association, see ST Aug), which included the application of Profile™ porous ceramic soil amendment, angular sand and peat, were designed to enhance drainage and stabilize the field. Still, Adkins was concerned. Since the renovations, Ryan Field, which Adkins has looked after for 4 years, hadn't seen a rainfall amount close to that which fell on October 13.



Northwestern's Napoleon Harris makes a tackle vs. Minnesota during a driving rainstorm that Ryan Field survived beautifully.

It was Ryan Field's greatest test of durability—and as it turned out, it easily passed.

It can be a ground crew's worst nightmare: persistent rainfall during a game. Trampling by 300-plus lb. football players for a 3-hour period alone takes its toll on any football field. Add drenched sod, and the consequences can mean thousands of dollars in time and product to repair divots or replace sod. But at Ryan Field following Northwestern's 23-17 win, there were no such consequences.

The sand-based natural turf field sustained only scuffmarks, Adkins said.

Divots and tears, common scars left behind after games played in inclement weather, were non-existent. Therefore, the field maintenance crew's post-game duties were, for the most part, no more demanding than had the game been played in dry conditions.

"It's a relief knowing you don't have to spend thousands of dollars to renovate again," Adkins said. "The money we spent (on the April 1999 renovation) paid off for this game. Adding Profile and then doing drill-and-fill this spring has paid dividends. We endured 2 inches of rain, and nothing happened. It was like a normal game."

Said Kraft: "The field held up extremely well. A lot of rain had fallen. We didn't have the big chunks that are standard in these conditions."

Ryan Field's durability surprised even Randy Walker, the Wildcats' head coach: "It was incredible. When I looked at the field the next day, I didn't see any significant damage. I don't think I've ever played a game in those conditions and had the field hold up so well."

Ryan Field's ability to withstand the elements on October 13 was in stark contrast to the beating it took in a 1998 Northwestern-Michigan game. The field suffered heavy turf damage, Adkins said, requiring major and costly stripping and replacement of battered and shredded sod.

The following spring, renovation began to improve turf drainage and soil stability.

Based on recommendations from a Profile agronomist, the existing root zone was amended with a combination of the product, a porous ceramic, and a more angular sand than was in place. The old sod was stripped off and removed, and 15 truckloads of angular sand and 88 tons of soil amendment were spread over the field surface and tilled in to a depth of 6 in. In incorporating the new material with the original soil, the field's top 6 in. of soil profile consisted of 80 percent sand, 15 percent Profile, and five percent Dakota Reed Sedge Peat.

Last spring, the Ryan Field crew performed a drill-and-fill aerification that placed 1-in. diameter and 12-in. deep columns of the soil amendment spaced 5 in. apart into the sand to enhance drainage. The drainage rate was 6-7 in. per hour during the Northwestern-Minnesota game. Adkins said the product also increases the nutrient- and water-holding capacities of the rootzone, which help stabilize the roots.

"Basically, after the (Oct. 13) game we spent a half hour pushing the scuff marks together, and the next day we rolled the field and it was ready to go for next week's game, a 2:30 p.m. contest against Penn State in front of a national television audience," Adkins said. "I don't think anybody could tell that it had rained the previous week."

Following the Penn State game, the crew aerated and broadcast 1 1/2 tons of Profile onto the field.

"We did so based on the downpour that we had," Adkins said. "I wanted to get a little bit more air into the field and smoothness on the field.

"We got a couple of comments from players and coaches (following the October 13 game)," Adkins said. "But mainly they were quiet, which was good. The field wasn't involved in the outcome of the game. I saw a couple slips, but for the most part the footing held up fine throughout the whole game."

As did Adkins' confidence. As the game proved, the sound drainage and stability features of Ryan Field have made the maintenance crew's job easier and illustrate its worthiness as the 2000 Field of the Year. **ST**

Nathan Odgaard is a writer for Swanson Russell Associates.

Quality above depends on quality below

BY MARLIN BREEMS

Out of sight, out of mind! Sub-surface drainage is seldom seen and seldom thought about. Items such as turf, fertilizer, bleachers, P.A. systems, scoreboards, irrigation, and field markings are more visible and get more attention. However, when a downpour 2 hours before an event turns your field into a mud bowl, the issue of drainage comes to mind. The quality of the field above depends greatly upon the quality of the drainage system below.

Whether designing a drainage system for a new field or for an existing field, certain principles must be considered. The first thing to consider is the system's total capacity. In other words, "How quickly do you want your field to return to a playable condition?" If your field is already saturated with water, and you receive a 3-in. rainfall, then 84,150 gal. of water need to be removed. The field's owner needs to decide about what a reasonable drainage time would be. Is the field located in Florida or Arizona? Is it for amateur or professional use? What kind of flexibility will there be for rescheduling? If the park and recreation department regularly hosts soccer tournaments for out-of-town teams then the designers may wish to drain that field in an hour, not days. A 12-in. smooth wall pipe could accomplish that, assuming of course that the lagoon, stream, or storm sewer is able to accept that speed. It is more likely that 4 6-in. smooth-walled pipes do the job. A 6-in. rain would double the requirements.

This all assumes, of course, that the field is equipped with a system that is able to collect the water and send it on its way expeditiously. It also assumes that the water is able to readily get into the collection system. A herringbone pattern is typically used when the field has a crown in the center running the length of the field. The herringbone allows water running from the higher elevation to cross over a drainage line rather than running parallel to the drainage lines toward the edge of the field. If the field is flat, or has less than a .005 gradient (.5 percent slope) from the center, then a parallel or grid drainage pattern may be appropriate. This drainage pattern should be extended 15 ft. beyond the sidelines to include the area were players and coaches stand.

The drainage lines should be located between 10 and 20 ft. apart depending on how quickly you wish to see your field recover (see Fig. 1). These relatively close spacings are needed for different reasons on different fields. Fields with healthy, porous soil will drain quickly, filling the collection system. If the collectors are spaced too far apart they will be called upon to carry excessive of amounts of water and backup will result. Fields with dense, clay-like soil will not drain nearly so quickly. Water will tend to pool on the surface and seep into the collection system on the collection lines. This will be most feasible if sand backfill from around the pipe extends up to near the surface.

Collection systems located near the surface respond more quickly than those deeply buried do. Attention should be paid to burying the system to a depth that will avoid soil aeration techniques. The system that is submerged 6 in. with sand located above and around the collectors is fast and efficient. Products with a tall but enclosed core such as the Multi-Flow Drainage System provide a substantial surface area with which to intercept and collect the water and flow rates that get rid of it efficiently.

A multi-layered filter system (Fig. 2) protects the collectors from failure due to blinding and guarantees a long life. A fabric filter prevents the core from filling with fine sand and silt. A 3.5-4-oz. needle punched geo-synthetic fabric will do the best job. An inch or two of very coarse sand surrounding a fabric will prevent the fabric from blocking. As the water passes through the sand particles of clay and silt are arrested before they reach the fabric filter.

This is much more critical in some soils than in others but it is always an effective insurance against a blinding. In some circles filter wrapped drainage medium has received some bad press. For example the USGA discourages its use. However filter wrapped drainage medium encased in sand is a safe investment. Tom Biddart, a turfgrass management technology instructor at Fairview College, teaches that encasement in course sand is the only way to satisfactorily protect a geotextile filter and thereby protect the drainage system.

Sports turf drainage is a science in need of far more attention than it gets. A well-designed sub-surface drainage system will yield rewarding dividends in attractive, hardy, healthy, and cost-effective turf. ST

Marlin Breems is director of marketing for Varicore Technologies. He can be reached at 800-978-8007.

Figure 1

Figure 2

TURF AERATOR

Classen's TA-26D roll-type aerator features is a self-propelled coring machine that fits tight areas, says the company, and offers user-friendly handling and controls to lessen operator fatigue.

The unit has a 4-hp Honda engine, removable 50-lb. weight bar, a guard to keep cores, grass or leaves away from chain and sprockets, and fits through a 42-in. gate without removing the rear wheels.

A single lever controls both throttle and belt tightener for smooth engagement, and the unit's front poly drum makes it easier for you to turn around as well as propel the unit when not aerating.

Classen Manufacturing/888-252-7710
For information, circle 161

CUSTOMIZED DRAINS

Nyloplast, a division of Advanced Drainage Systems, manufactures customized drainage structures. A wide variety of turf applications rely on Nyloplast drainage structures to economically and effectively provide surface drainage, the company says. Golf course architects, landscape architects, and civil engineers throughout the world specify Nyloplast drain basins and inline drains. The PVC drainage structure includes a ductile iron frame and grate, and an ASTM F-477 gasket joint connection is used extensively to provide drainage for golf courses and athletic facilities of all types. Catalog is available.

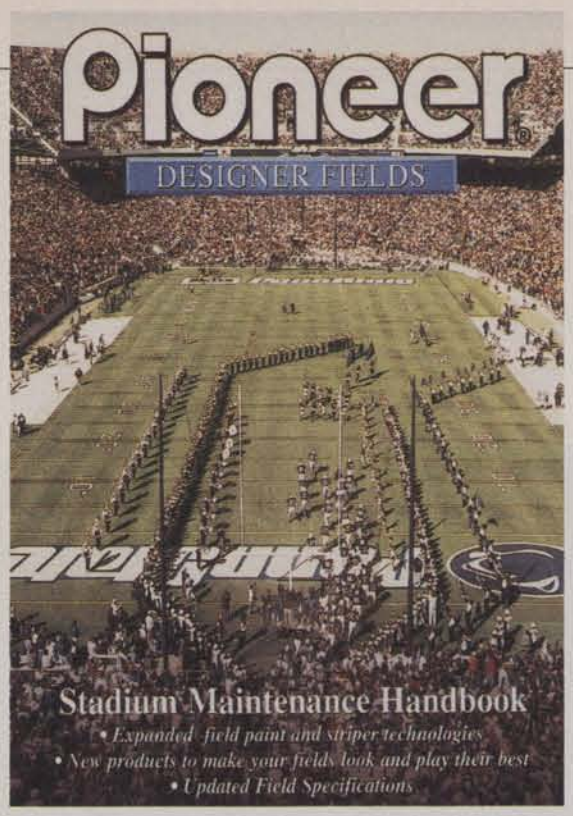
Nyloplast/866/888-8479
For information, circle 164

ECONOMICAL DRAINS

TerraDrain Strip Drain is supplied in rolls. It is comprised of a 1-in. thick polystyrene core and a nonwoven geotextile completely surrounding the core. TerraDrain Strip Drains replace French and pipe drainage systems. It was used on a municipal softball field in White Plains, NY, for example, to provide better drainage at a lower cost than a traditional system. The drainage layout has a "tree" configuration. Twelve-in. high TerraDrain was used on the "trunk;" 6-in. high TerraDrain was used on the "branches."

TerraDrain Strip Drain and other geosynthetic products are available from WEBTEC, Inc. of Charlotte, NC through a nationwide network of distributors.

WEBTEC/800-438-0027
For information, circle 163



FIELD CUSTOMIZING CATALOG

Pioneer Manufacturing says if you're looking for whiter, crisper lines on your football field, or custom logos to put your team name in the endzones, or looking for some tips on maintaining your fields, help is available through their Designer Field's catalog.

Pioneer/800-877-1500
For information, circle 165

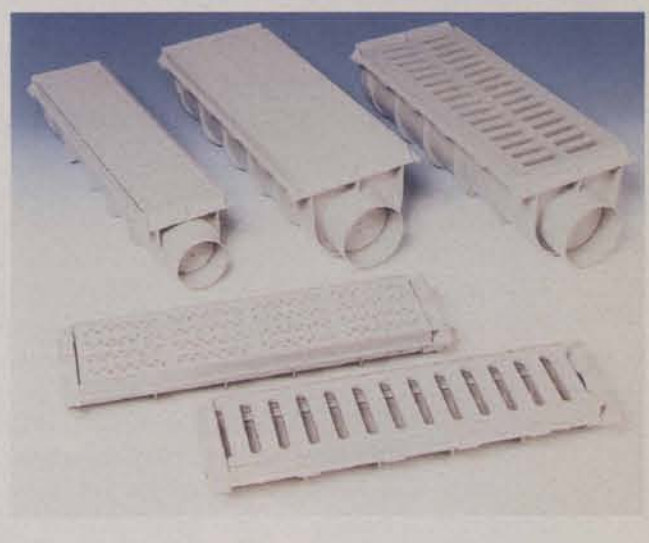
DRAIN CHANNEL SYSTEM

Canplas Inc. has introduced a new PVC drain channel system that it says won't corrode, chip, or peel. Also, all channels, grates, and components are made with UV inhibitors to prevent discoloration. The system features sections with interlocking joints that don't require couplings, allowing greater flexibility in creating a drainage system of any length.

The sections are then solvent-cemented together; you can choose from a variety of channel widths and depths, grate styles, combination end caps/knockout outlets, frames, and corners. Channels are available in 5- and 8-in. widths and in shallow and high (deep) configurations. High-profile channels are for where heavy flows are expected.

Three styles of grates are available: standard slotted, perforated, and solid cover. All grates have non-slip surfaces.

Canplas Inc/888-461-5307
For information, circle 166



NO NEED TO GRADE PIPE

The Turf Drain Siphon System is the first drainage system that allows the installation of drainage without the need to grade pipe. The system that has been used in difficult drainage areas on many of America's most famous golf courses since 1990 is also increasingly being used on athletic fields. The system is ideal for fields where difficult soil conditions require deeper drainage to effectively firm the playing surface, says the company. It's also the perfect answer when "there is nowhere to take the water." The Turf Drain Siphon system can take water over or through obstructions, such as bleachers and running tracks.

Andrew Mack, city engineer with the City of Pembroke Pines, FL, says "Prior to installation of the Turf Drain Siphon System our ball fields were unplayable after an afternoon rain storm, but since we installed the system our fields are ready shortly after the rain stops."

Turf Drainage Co. of America/800-999-2794
For information, circle 169

VALVE-MOUNTED CONTROLLER

A battery-powered, valve-mounted controller that provides automated valve operation without hard wiring or outside power requirements is available from Irritrol Systems. For use in areas where a hard-wire connection is impractical, the IBOC100 also can be used to convert existing manual or electric valves to independent battery operation. Irritrol says the unit is easy to install, requires no trenching or field wiring, and is hand-programmable.

Station run times are programmed in real time from 6 sec. to 23 hrs, 59 mins. Four irrigation cycle options, a default program, and a delay-start feature add flexibility.

Irritrol Systems/909-785-3623
For information, circle 167

TURF BLANKETS

Turf Defender™ turf blankets promote germination and growth while protecting from winterkill, says manufacturer Typar Turf Blankets. Made of woven polypropylene fibers, these blankets have UV stabilizers to resist sunlight. A 2-in. hem along the edge gives extra strength.

The blankets serve as a physical barrier to winter winds, small animals, and egg-laying insects while not inhibiting sunlight, moisture, or nutrients from penetrating through so soil conditions can remain healthy.

Use by rolling the blanket over the turf and pin every 3 ft. over the surface of the entire blanket with U-shaped #9 wire pins; for especially windy areas, place #3 rebar around the perimeter.

Typar Turf Blankets/800-455-3392
For information, circle 168

CARRY IT WITH YOU

The Station Master Pro Model 24A is a portable, battery-operated diagnostic tester that combines both a solenoid activation and wire identification for irrigation systems.

Functions of this unit: activates solenoids; tests for good, open and short valve connections; sends tone to identify wires; measures clock voltage and warns of low battery. It's housed in a high-impact ABC plastic case, and operates on two 9-volt alkaline batteries.

The test leads come equipped with premium "bed-of-nails" and piercing-pin/bent-nose clips for use on insulated wires without cutting or stripping.

Progressive Electronics
For information, circle 162