



The New Comiskey Park.

## Sports Field Construction: The Class of 1990 -

By Matthew Trulio

By most accounts, business has been steady in the sports field construction and renovation business during the last year-and-a-half, despite the current recession. Credit the flux to increased demand for playing fields, a renewed focus on quality and aesthetics, or even sports turf liability issues (and when a million dollar field may protect the knees of a \$10 million athlete, those issues become large indeed). The result is more top-notch facilities. And that's a good, healthy sign for field builders and sports turf managers.

If a single trend or focus emerges from the fields of 1990-91, it is *not* a particular type of field construction system, irrigation set-up, fertilizer program, or grass variety.

No new technology has broken from the pack to lead all others. What they do have in common, however, is a heavy emphasis on *drainage*. All facilities in this article listed drainage as a key goal in their construction. This may be because a growing number of superintendents and grounds managers, who realize how drainage dramatically affects turf health and day-to-day field playability, are getting involved in the construction of the fields they manage, *at the design level*.

Here is an overview of a half-dozen fields at the collegiate and professional levels. Far from a complete list of all the natural turf (another growing trend) facilities constructed in the last year-and-a-half, this ar-

ticle chronicles only six high-quality, state-of-the-art fields. Many more top-notch diamonds and gridirons were constructed in 1990-1991. Undoubtedly, many more will follow.

### University Of Florida: Quality Within The Budget

After a number of years with an artificial surface in Hill Griffin Stadium-Florida Field, University of Florida, Gainesville officials decided it was time for a change, but a change within their financial means. They reviewed several field systems before making their final decision.

"Economically speaking, the USGA sand-based field we put in at Hill Griffin Stadium-Florida Field offered considerable

savings, relative to other fields," explains Mike Powell, project manager for the University Athletic Association. "It's also a conservative, tried and true field system."

Chuck Dixon of Turf Diagnostics and Design, Dan Morgan, an agronomist, out of Tampa FL, and the Gainesville firm of Henderson, Quinn & Associates, consulted on the project, working in conjunction with Powell. They chose bermuda 419 sod for the 87,000-square-foot job. Given the site, drainage was paramount.

"Before the site became a stadium field, years ago, it was a pond," Powell explains. "Drainage was a hot issue, because the site has a high-groundwater table. Without drainage, there would always be standing water on the field."

To solve the drainage problem, 5,400 feet of under drain was installed, with 14 runs approximately 20 feet apart. This in turn was bedded in a ditch cross section filled with crushed gravel.

"The other day, we had two inches of rain here in about 40 minutes," Powell enthuses. "Fifteen minutes after it stopped, there was no standing water on the field."

The university also renovated two practice fields less than a mile away from the stadium, but instead of sodding with bermuda 419, they sprigged the entire 170,000 square feet. Powell says they would have preferred to sprig the stadium field, but aesthetic and time considerations prohib-

only 1,200 feet more than the amount installed at the stadium field, which is less than half the size. "You don't have the groundwater problem on the practice fields that you do on the stadium field," Powell explains.

The irrigation systems, using Toro equipment, were designed to be as unobtrusive to the players as possible.

"On the stadium field, we used Toro 640s in what is essentially a row of seven down each hashmark," says Powell. "On the sidelines, we used 650s, eight feet off the wall. Only two rows of heads are in bounds. I feel that's an important issue for football, and soccer as well."

#### Ohio State Goes PAT

When Ohio State University decided it was time to replace the aging artificial surface at Ohio Stadium, they decided to go with a PAT (Prescription Athletic Turf) system. The system was installed at several fields in 1991, including the University of Michigan, the University of Alabama, and the new ballpark for the Baltimore Orioles.

"One of the principal features of the PAT system is the use of vacuum for positive moisture extraction," explains Laurel Mead, executive vice president of PAT Turfgrass Services. "All engineering of the

system is done in-house by Turfgrass Services, but the actual systems are installed by licensed PAT contractors."

Turf Services of Grand Haven, MI, installed the PAT system at Ohio Stadium. "By all reports, the system is working well and everyone is extremely pleased," says David Heiss, president of Turf Services. "It just takes a little while for the field to settle in. After the first few games on a PAT, everything is fine."

PAT fields are completely flat, and getting them that way, particularly in the case of a field renovation, can be difficult. However, Ohio Stadium, says Heiss, was fairly level and did not pose much difficulty in this regard.

Like all PAT fields, Ohio Stadium was excavated to a depth of 12 inches. A plastic liner was then installed, with a network of drainage tile above it. After the liner and tiles are installed, the excavation is back-filled with sand—in this case 5,000 tons of

it—and then the soil and amendments, irrigation, and sod are installed.

A system of pumps underneath Ohio Stadium pulls water off the field. Both vacuum pumps and discharge pumps were installed. The system's electronics are also housed beneath the stadium, and the system can be completely automated by electronically setting drainage and irrigation values.

Ohio State chose a bluegrass sod for the field, which was evaluated by Dr. John Street and Dr. Bill Pound before selection. Huber Ranch Sod of Snyder, IN, provided the sod, a Kentucky bluegrass mix of Northrup-King Premium and Midnight. Since the sod's new home would be a sand-based field, the fact that it was grown in sandy loam played a large role in its selection.

The irrigation system includes Toro 640 heads and moisture sensors. "We monitor moisture throughout the field," says Kevin Miller, OSU's athletic field manager.

"When I deal with colleges and professional teams," says Heiss, "I say that the bottom line with PAT is that it's a proven, patented product."

#### Going Custom In Kansas City

When the Kansas City Chiefs decided to build a new 450-x-450-

square-foot "athletic area," at the Harry S. Truman Sports Complex, designed by HOK Sport Facilities Group, they turned to its head groundskeeper, Chip Toma, Dr. James Watson, and Chuck Dixon, an agronomist and founder of Turf Diagnostics and Design in Olathe, KS. "It was like someone said, 'Here, build the field of your dreams,'" says Toma.

"We call it an 'athletic area' for a reason," he continues. "What we mean by that is you have enough area for two fields, either north-south or east-west. The field is completely uniform from ground level to root mix, which reaches down 16 inches, which we felt was a better environment for bermuda and also had a little better gravity pull than a 12 inch mix. Having the field completely uniform makes it much easier to maintain."

The area's 80/20 root mix is made up of sand from Holiday Sand & Gravel in

*continued on page 12*  
August, 1991 11

# 1991

ited it. They also would have met USGA specifications on the practice fields, had sufficient funds been available. Still, Powell is quite pleased with the job they were able to do, within their budget, on the practice fields.

"The fields were originally built in 1964, and one inch of rain would flood them out," says Powell. "We removed the top nine inches of material, mixed nine inches of fairly coarse sand with Dakota Reed Sedge Peat, and topped it with three inches of fine sand. We ended up with a very homogeneous and even mix, with a flat percolation rate of 9-1/2 to 13 inches an hour."

Under drain, 6,200 square feet of it, was installed under the practice fields. This is

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*"The bottom line with PAT is that it's a proven, patented product."*

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From left: Scott Martin and Chip Toma show root development one week after sodding at the Chiefs' Kansas City practice facility.

## New Fields

*continued from page 11*

Kansas City and North Dakota Reed Sedge Peat. Holiday Sand & Gravel did the physical mixing, based on a formulation created by Toma and Dixon.

"We planned for drainage, not just now, but two or three years from now," Toma points out. "Any field will eventually start to lose drainage because of compaction and accumulated organic matter in the root zone. That's why we have a complete aeration program."

To get water onto the field, Toma and his team chose a Toro irrigation system, designed by Joe Sheets of Champion Turf in Kansas City, with Toro 670 heads. Aside from the obvious goal of complete coverage, Toma says he wanted the system to be simple.

"Honestly, we wanted to get away from all the 'bells and whistles,' so to speak. We wanted a system that anyone could easily turn on and check, so we went with a real simple controller.

"The system has a diamond pattern," he says. "We added a large, high-pressure, high-volume pump so we'd be sure to have plenty of pressure. We also considered a field warming system, but decided against it since we have an indoor field and the manpower to cover this one if necessary."

The U-3 bermudagrass they chose was acquired from Green Acres Turf Farm in Bixby, OK. They've since overseeded with

PhD. ryegrass, which Toma says he can still see in the field.

The head groundskeeper emphasizes quality control as the key to the athletic area's successful installation.

"I would be on the field at each stage, like when they were spreading the sand," Toma recalls. "There was no way I was going to miss anything. We had meetings on the field every day with the different contractors. You've got to make sure everybody is talking to everybody else. In all, it worked like a well-oiled machine!"

### Cleveland's Net Gain

David Frey, field maintenance director of Cleveland Stadium, home of the Browns and the Indians, took a diverse approach to directing construction of four new practice fields for the Browns in Berea, OH. He used a variation of the USGA system.

"I'm not a sand field proponent—I'm not convinced they work with northern grasses," says Frey. "We used a USGA-type system on all of our fields, as an alternative to all-sand fields. And we didn't use a fabric choke layer—we used a gravel choke layer."

On the fourth field, they incorporated Netlon. "The Netlon system consists of a three-dimensional fiber matrix in the top six inches of the soil mix," Frey explains. "It ties itself together as the plants grow. Essentially, it gives you a tremendous amount of stability under traffic."

Kurtz Brothers of Independence, OH, did all the soil mixing and worked in acquir-

ing Netlon. Independence Construction, of the same town, performed the physical construction.

Four varieties of bluegrass were used to seed the fields: Midnight, Liberty, Bristol, and Eclipse. Seeding was Frey's first choice from the beginning.

"There's no doubt that if you can seed, you have the exact growing medium you want," Frey emphasizes. "If you sod, you get somebody else's growing medium, unless you wash the sod. Obviously, of course, time is a factor when you seed."

Hunter heads were used in the irrigation system. Each lateral can be controlled individually, and all valves are off the fields. As for drainage, Frey expects it to be "out of this world."

"We expect our percolation rate to be four to five inches per hour, depending on how much turf cover we have," he says. "Of course, the fields haven't been used yet."

### Play-All At Comiskey

Of all the fields constructed during the last year-and-a-half, none has received more national media attention than New Comiskey Park. Designed by HOK, the facility replaces Comiskey Park, home of the Chicago White Sox since 1910. Tradition was everywhere in the original park and many die-hard Sox fans didn't take kindly to its demise. Others, tired of obstructed views and deteriorating facilities, welcomed it.

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Although the Sox are playing on a new diamond this year, some things haven't changed, like Roger Bossard, head groundskeeper for Comiskey for the past 25 years. Bossard, a third-generation groundskeeper, directed construction of the diamond, which features a Play-All field system. The system was designed by Bossard in conjunction with Sportsfields, Inc., of Blue Island, IL.

*continued on page 14*

## New Fields

continued from page 14

"The New Comiskey field is sort of state-of-the-art," says Bossard. We ran 6,400 feet of four-by-six-inch drainage tiles on 15-foot centers. Around the tile, four inches above, two inches below, and two inches on the side, we put down birdseye gravel. Then we put down four inches of sand. In the top four inches above that, we conditioned the area with 66 yards of spagnum peat and 88 tons of calcined clay fines."

Bossard and Sportsfields started work on the field after it was brought to a "blue-top" condition, which means it was 12 inches below grade with 95 percent compaction. Still, because the new park was constructed in an area where buildings were demolished, some unusual challenges arose during field construction. "When we put in the drainage tile, we ran into two open catch basins, a few brick walls, and even an old street," Bossard reveals. "We replaced more than 40 carbide trencher bits."

To add durability to the infield and areas where players stand most often in the outfield, Bossard incorporated stabilization fibers into the field. Rather than putting the

Conwed fibers down at three inches, which many turfgrass researchers recommend, he had the fibers installed six inches below the field surface.

"If you have a good maintenance program, 90 percent of your roots will be in the first three inches," says Bossard. "But I wanted my feeder roots to stabilize, and they go down deeper. If the plant isn't stabilized at a six-inch depth, it won't be stabilized at a three-inch depth."

The diamond was sodded with a 12-month-old, eight-cultivar blend of four bluegrasses and four perennial ryegrasses from Evergreen Sod of Peotone, IL. Bossard says that because of the accumulation of blends, the field is less susceptible to disease than one with a single grass variety.

"It's not likely that you'd get a disease that would kill all eight blends," he says. "I added the ryegrass to the mix for its light color, which really shows up when you're striping."

The Sox and their head groundskeeper aren't the only traditions which moved to the New Comiskey. Bossard and his crew brought the old infield dirt, all 19 semi truck loads of it, to the new facility. They

moved it in layers, four inches at a time, and laid it down in opposite order in which it had been removed so the mix would remain the same. To protect the newly sodded field from the weight of the trucks, they put down four layers of geotextile and three layers of 3/4-inch plywood. Even with that protection, 150 square yards of sod had to be replaced when the process was finished.

"We didn't move the infield dirt for nostalgia's sake," Bossard explains. "Besides, the players liked it. And that's what it's all about."

### Pulling The Rug Out At Foxboro

If the 1990 season wasn't particularly kind to the New England Patriots, they can take comfort in the fact that this year they will be playing on a kinder, gentler home surface at Foxboro Stadium in Foxboro, MA. Spearheaded by Patriots' CEO Sam Jankovich, the team and the stadium owners replaced their well-worn artificial surface with a GraviTURF Natural Turf Athletic System from Randall & Blake, Inc., a landscape architecture and construction firm based in Littleton, CO.

The GraviTURF system is a gravity-drained, sand-based athletic field setup. It



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begins with perforated pipe drainage lines, which vary from four to 12 inches in diameter, depending on the drainage requirements of the particular project. The pipe is then bedded in pea gravel, and a warming system is installed if requested, as in the case of Foxboro.

After the warming system was installed, it was covered by a sand and peat mix. The job of making sure the sand and peat were compatible went to Chuck Dixon of Turf Diagnostics and Design.

Although RBI generally prefers to seed fields, time constraints forced them to choose sod for Foxboro. To help select the sod, as well as design the pre-plant and post-plant fertilization program they worked with Mark Altman of Altman & Altman, independent soil fertility specialists based in Marshall, MN.

After testing sods from a myriad of farms, they found what they were looking for at Gold Star Farms in Canterbury, NH. They chose a Kentucky bluegrass of 27 percent Merit, 30 percent Ram, 20 percent Glade, and 23 percent Eclipse.

Altman's pre-plant fertilizer program, incorporating biostimulants and foliar feeding, was implemented several weeks before the sod was harvested. After harvest, the sod was washed completely.

One of the main keys to the system, says Dan Almond, RBI's design/build manager and licensed landscape architect, is drainage.

"We guarantee our percolation rates at five inches per hour, but at Foxboro we'll probably get a percolation rate in the range of six to eight inches per hour," Almond asserts. "According to tests we've done recently at the Broncos practice facility [which also installed a GraviTURF system], the percolation rate there now is 6.2 inches per hour."

To protect and maintain their new field, the Patriots and Foxboro's managers hired Pierre Landry as field superintendent. The 29-year-old from Rochester, NY, has a degree in plant and soil science from the University of Massachusetts and was previously an assistant superintendent at Monroe Golf Club in Pittsford, NY, and Andover Country Club in Andover, PA. He was recommended for the Foxboro job by RBI.

"I've worked with USGA sand-based greens, so I have a good idea about their irrigation and fertilization needs," he says.

"The stress on this field is going to be different than it is on a golf green—it's more physical than environmental.

"I think the biggest challenge is going to be satisfying the needs of coaches and players, in terms of game conditions and allowing them on the field," Landry continues. "Of course, I want to keep them off it as much as possible [between games], but it's their field and they're going to want to practice on it."

"We'll work it out by developing a good relationship where understand each other's needs."

## Into The '90s

Six fields, six systems, six (we hope) success stories. How these and the many other fields constructed in the last year-and-a-half will fare may depend as much on maintenance as it does on design and technology. Judging from the designers, builders, and field managers who were interviewed for this article, the push for high-quality natural playing fields, at all levels, is growing. And like the intense focus on proper drainage, that's good for the entire sports turf industry. ☺

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