



Joe Robbie Stadium as it was being prepared for the last game of the Dolphin's 1988 season.

# Joe Robbie Stadium Prepares For Super Bowl XXIII

**F**ifty-four million households are expected to have their television sets tuned to Super Bowl XXIII this month. The contest for the National Football League Championship has become one of the premier televised sporting events in the world. And, perhaps the first time, it is being held in a stadium that was designed in large part as a multi-million-dollar stage for the Super Bowl — Joe Robbie Stadium in Miami, FL.

The NFL selected the stadium as the site for Super Bowl XXIII when it was nothing more than a set of architectural drawings. Joe Robbie, owner of the Miami Dolphins, wasn't even certain he could finance construction of the \$120-million stadium when he unrolled the blueprints on the conference table at NFL headquarters in New York to show the Super Bowl Site Selection Committee.

He wanted to own the stadium, building it without financing from state or local governments. To obtain private financing, something few sports authorities believed was possible at the time, Robbie developed a unique plan.

With the help of HOK Sports Facilities Group in Kansas City, MO, Robbie satisfied the NFL committee that he could indeed finance his dream. He also realized that his plan would be more likely to succeed with a commitment from the NFL for the 1989 Super Bowl.

The plan hinged on preselling tickets and long-term leases for more than 200 skyboxes and 10,000 club seats, far more than had ever been built in a stadium before.

To win the confidence and support of Miami fans and the NFL, Robbie had to build a better sports facility than the famous Orange Bowl. In addition to providing parking, comfortable seating, and convenient concessions for 73,000 spectators, he needed the ultimate field for both the players and the extremely important television audience.

For a long time, Robbie had shown special interest in the field conditions at the Orange Bowl, home for his Dolphins from 1965 to 1987. He has been a fan of natural turf since 1976, when he was instrumental in having the artificial turf in the Orange

Bowl replaced with a Prescription Athletic Turf (PAT) system.

When it was time to decide what type of surface the new stadium would have, Robbie again chose PAT. HOK's Dennis Wellner recalls, "Joe Robbie wanted natural turf from day one. He was very realistic about the limitations of a natural field, but he insisted on it anyway."

The field was also the largest PAT system at the time. It was proportioned by HOK to meet international soccer standards, in addition to football and baseball (with some alterations). As a result of its size, the stadium is almost certain to be used in 1994 during the World Cup Soccer tournaments. Robbie was a tremendous influence in convincing FIFA, the international soccer federation, to select the United States for the games.

Cancellations are a definite threat in Miami, where tropical storms are commonplace and the annual rainfall averages 60 inches. The patented sand-based field with suction drainage can remove four inches of water from a field in one hour. The plastic

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liner below the field also prevents salty sub-surface water from intruding and allows the field to be subirrigated.

Salt-water intrusion is a distinct possibility, because the stadium is located on the Snake Canal in Davie, FL, a few thousand feet from the ocean. The water table is just one foot beneath the surface. To stabilize the foundation of the stadium, 500 cubic yards of fill were brought in to raise the stadium ten feet. The grass parking lots, however, remain at the original elevation.

Southern Turf Nurseries (STN) of Norcross, GA, is the licensed PAT installer in the Southeast. As the stadium took shape, STN was custom-growing three acres of Tifway 419 bermudagrass on the sandy soil at its sod farm in Lake Wales, FL. "We had soil samples from the farm tested," recalls STN's Bill Wilson. "The lab said the samples were the closest thing to a greens mix they had ever seen."

Construction of the field took place between February and May 1987. The Dolphins' first exhibition game at Robbie Stadium was scheduled for August, so the sod had to knit in roughly two months.

STN began to prepare the flat subgrade on February 9. No slope in the subgrade is required for the PAT system to operate. The plastic barrier was then placed on top of the subgrade. Three miles of wrapped, perforated drainpipe were positioned on top of

the barrier. The pattern of the pipe was designed to drain and subirrigate the field in three sections, one for the center of the field and two for the sidelines.

The drain lines feed into "wet pits" located behind both goalposts. Under normal circumstances, the pits serve as large collector drains, removing excess water by gravity. When rainfall exceeds normal drainage, suction created by two pumps underneath the stands is utilized to pull water through the root zone. To subirrigate, the process is reversed by adding water to the wet pits.

At the same time, STN installed the mains and laterals for the surface irrigation system. It consists of 44 Toro 640 heads placed in a square pattern 64 feet apart. At Robbie's request, only 12 heads are located in bounds.

The other important ingredient of the drainage system is the foot of sand that makes up the root zone of the field. Dr. William Daniel, inventor of the PAT system, made sand part of the design for two primary reasons: It does not compact and it drains better than soils containing clay or silt. He selected fine to medium-sized sand because it retains moisture better than larger sands.

For Joe Robbie Stadium, STN shipped in 8,000 cubic yards of properly sized sand and carefully spread it over the drainage and irrigation lines. Although the system does not require a sloped surface to func-

tion properly, a four-inch crown was installed so water could run off tarps. The NFL requires that all stadiums have a tarp to cover the field during a pre-game or game-time rain.

To provide additional moisture retention and to improve the cation (chemical) exchange capacity of the sand, calcined clay was mixed into the top three inches. Ten pairs of Aquamiser moisture sensors were then imbedded at two depths in the sand, two inches and four inches. The sensors were connected with wire to a controller next to the irrigation controller. The risers and sprinkler heads were installed and the sand was irrigated before the sod was shipped from the farm to the stadium.

By May 1, all 128,000 square feet of sod was installed and rolled. Both surface irrigation and subirrigation were activated to encourage the sod to send down deep roots. The moisture-control system was set between 30 and 50 percent. Frequent soil tests were taken so that nutrient levels could be kept at moderate-to-high levels at all times. Granular slow-release fertilizers are the backbone of the nutrition program.

Controversy seems to surround every new facility in professional sports, especially when it is hosting the Super Bowl. Not only does Joe Robbie take an interest in the playing field, the Dolphins' Don Shula is perhaps one of the most vocal coaches in the NFL about field conditions. He listens

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Mascaro's invention, the Vertislicer, was used to break through a subsurface layer and to encourage root growth.



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carefully to his players' comments about field conditions and doesn't hesitate to call in the groundskeeper for his response. He had done this regularly with Dale Sandin at the Orange Bowl and continued the practice with Dean Kuykendahl at Joe Robbie Stadium.

Try as he might, Kuykendahl could not satisfy Shula or completely master the PAT system.

He'd solved early problems with thatch and loose turf through a topdressing program. He grasped the delicate process of overseeding during the football season with perennial ryegrass. He got the field through a number of concerts without problems. Nevertheless, as football season started this past summer and the NFL started making its standard inquiries in preparation for the Super Bowl, support for his efforts started to dissolve.

Daniel suggested that the Dolphins hire turf consultant Tom Mascaro to help Kuykendahl out. Mascaro is a pragmatist whose experience with turf and soils spans more than 40 years. He is also an inventor, with claims to the aerifier, verticutter, Vertigroove and Vertislicer. He brought to Joe Robbie Stadium a confidence and relaxed

method of problem solving that Kuykendahl could not match. When Kuykendahl had an opportunity to leave, he took it.

The Dolphins asked Mascaro to help them find a new groundskeeper. He learned that a golf course superintendent, who had applied for the job when the stadium was built, was still very interested.

Gary Morris, superintendent at Emerald Hills Golf Course in Hollywood, FL, was very familiar with the needs of hybrid bermudagrass in sand root zones. The bulk of his learning experience was gained as assistant superintendent at PGA National in Palm Beach Gardens, FL. "I really wanted



**Super Bowl XXIII groundskeepers (from left) Chip Toma, George Toma and Gary Morris.**

the challenge of managing a professional field," Morris admits. "At PGA National I got used to the pressure of major events."

Pressure is what he likes and pressure is what he got — arriving at the stadium on a Wednesday in early October, with a Dolphins game on Sunday. "Tom had the stadium turf in good condition, so I focused my efforts on getting the field ready for the game, learning how to paint the lines and emblems," Morris says.

Much of his time the first week was spent at the Dolphins' training center in Hialeah, FL, working on the practice fields and getting to know the players and staff. "I wanted to know how they felt about things at the stadium and training center. It gave me a starting point to work from and let the players know I intended to be a good listener, Morris explains."

The two-and-a-half-field complex will serve as the practice site for the AFC champions the week before the Super Bowl. The NFC champions will practice at the University of Miami in Coral Gables.

Working together, Morris and Mascaro started to uncover the causes of some of Kuykendahl's problems. The center of the field was thinner than the rest. "It looked like disease, but it wasn't," Morris recalls.

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A network of drainpipe on top of a moisture barrier serves to drain and subirrigate the PAT system.



A foot of sand was carefully spread over the drainpipe.

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"The base for the pitcher's mound is also there."

They discovered that lightning had damaged the soil-moisture probes in the center of the field. They also found that the nozzles in the four center sprinklers were too small and changed them. "The center of the field just wasn't getting as much water as it needed," adds Morris.

He and Mascaro felt that the topdressing program had outlived its usefulness. More than two inches of sand had been applied on top of the sod in one year's time. They took core samples and noticed the roots of the overseeded ryegrass stopped at the level of the original sod.

The stadium's aerifier didn't go deep enough to break through the layer, so Mascaro brought out his latest invention, the vertislicer. Fixed vertical blades on the machine cut six-inch-deep slices in the soil.

"You can see where we sliced," says Morris. "The ryegrass is darker and has roots four inches deep. You don't see the lines during games, because we put down iron (Ferromec) beforehand and all the turf responds. Next year we are going to aerify deeper and more often. We'll also hold off on topdressing unless it's necessary."

Since he arrived, Morris has applied perennial ryegrass before each game for the players to work into the soil. "The surface is a little looser than it should be because of all the sand," he remarks. "The more roots the ryegrass can establish, the tighter the surface will be. Sand also gets tighter when it's wet."

When the NFL's George and Chip Toma arrived in late October to plan for the final preparations for the Super Bowl, they noticed the improvements Morris and Mascaro had made. "The field was a lot better than it was last spring," George recalls.

"Morris is a good groundskeeper, and Tommie (Mascaro) may be the smartest grass man in the country. We talked about the rooting problem and made arrangements to get them some more equipment."

At the same time, Toma took core samples where the turf had been painted. "We found paint six inches deep in the soil," he reports, "and the roots weren't growing in the paint. Sometimes you can brush or verticut the paint out. But since the worst problem was in the center of the field, we decided to order thick-cut sod for that area. We'd make a decision on the endzones after Christmas."

Fortunately, the stadium would not be used after the Dolphins' last home game on December 12. That week the truck carrying all the NFL equipment and supplies arrived at Joe Robbie Stadium. The two Tomas and three of their crew from Kansas City also arrived to stay, with only a break for Christmas.

The first order of business was to brush the paint out of the endzones and to "shattercore" the field 2½ inches deep, using a Coremaster with solid tines. Chip started to pregerminate 1,000 pounds of Ph.D. perennial ryegrass blend.

Central Florida Sod brought in 1,000 square feet of sod cut 2½ inches thick. As a 50-by-90-foot section of the center was resodded, the pregerminated seed was mixed with calcined clay and Milorganite in a cement mixer.

The crew spread half the seed over the field and aerified again to a depth of one inch. The rest of the seed was applied and topdressed with a light layer of sand and black peat moss. "The dark peat absorbs the heat of the sun," Toma adds. With the sod and pregerminated seed down, the field was rolled lightly to smooth out the sandy surface.

Morris' stadium crew worked alongside

the Tomas and their crew for nearly two weeks without a break. "We had the lights on at night so we could keep working," says Morris.

"Glen Mon, the stadium manager, was a big help," adds Toma. (Mon moved over to Joe Robbie Stadium this past year from the Los Angeles Coliseum.) "He understands what it takes to put on the Super Bowl."

Because Morris needed to devote most of his time to the stadium, the Dolphins hired Mascaro's daughter, Linda, to work with Chip on the training center and the University of Miami facility. She graduated from Penn State's turfgrass management course last spring. "She may be the first women groundskeeper at a professional stadium some day," her father says proudly.

The Tomas brought a new NFL tarp with them this year. "We'll use the new tarp on the stadium and the Dolphins' tarps on the practice fields," George explains. The new Covermaster tarp is silver on one side and black on the other. "You put the black side up to help warm up the field."

As Toma prepared to go home for a three-day Christmas break, he was confident that any major problems were under control. "We may have to resod the endzones because of the paint, but everything else seems to be going fine," concludes Toma. "Mr. Robbie is going to be happy. It's a beautiful field. Just wait to see how she looks all dressed up on game day."

"I'm a lucky guy," says Morris. "Working under Tom, George and Chip is like a Christmas present for me. They've helped me out with the management and the team. The rest is going to be up to me. Next year the field will be as perfect as we can get it."

The stage is set. In return for the NFL's belief that he could build a stadium with private financing, Joe Robbie has given the NFL a perfect stage for the Super Bowl — and a field fit for champions. *Q*