BY **MARK HUSSEY**

New York turf courses get royal treatment

A dozen horses line up, ready to spring. The gates snap open, the alarm bell sounds: "And they're off!"

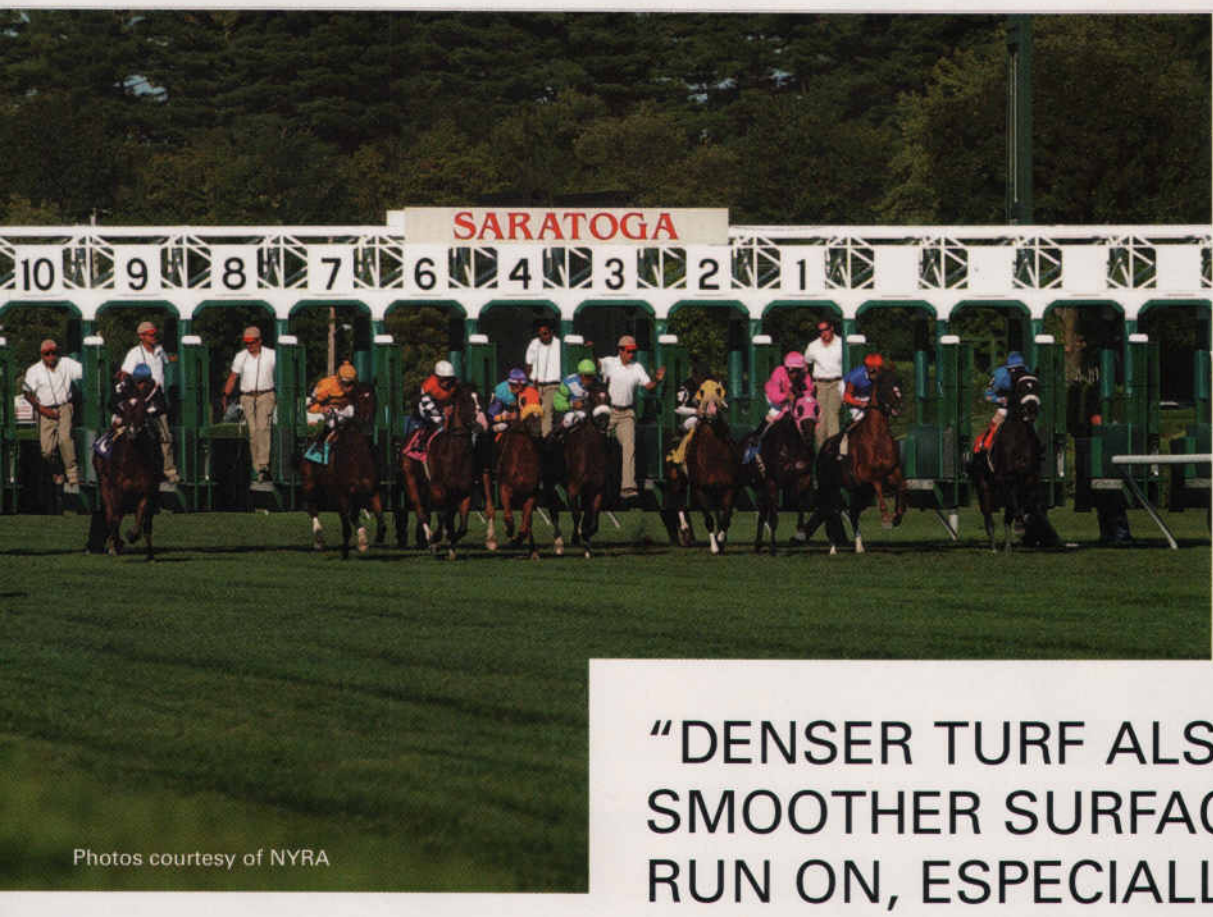
Few sports match the pure excitement of thoroughbred racing. For those who appreciate its color, speed, and furious athleticism, races held on thick green turf are the best. Those grass surfaces require a great deal more tender loving care and vigilance than racing's more commonly used dirt-and-sand surfaces. Cultivating and maintaining horseracing turf is, like horse racing itself, both a science and an art that keeps evolving over time.

New York is home to some of the nation's best, and best known, racetracks. Near New York City, Belmont and Aqueduct dominate the downstate markets while upstate, Saratoga is New York Racing Association's (NYRA) venue of highest rank. NYRA rotates the racing schedule throughout the year so only one of these three major tracks is operating at a time. The man responsible for making the "playing field level," for all competitors, on all surfaces, at all three tracks, is Jerry Porcelli, Track Superintendent.

To keep the turf in peak form, Porcelli must respond to numerous challenges, including some that most turf managers don't: the direct impact of horses' hooves, and geese. Porcelli has the easy confidence of one who knows his trade well. He's also someone who does not hesitate to solicit the opinions of peers at other top tracks that dot the US, or consult with academia's most highly regarded turf specialists.

Porcelli says, "A few years ago we heard that Dr. Frank Rossi of Cornell University was the 'go-to' guy at Yankee Stadium. His methods keep their turf fit for baseball's most demanding owner, George Steinbrenner. We had a series of

ALL THREE TRACKS USE A KENTUCKY BLUEGRASS BLEND THAT INCLUDES JEFFERSON, LIBERATOR, RAMBO, AND MIDNIGHT.



Photos courtesy of NYRA

On race days, according to Sinacori, after every turf race, crews go out onto the course like hunters on safari with specially tweaked shovels, filling in divots with dirt, and making other needed "course corrections."

Another tactic used during the long racing season is pushing out the rail that marks the inner border of the course. This gives the inside 10 feet of the grass oval a rest for a few weeks. Later, the fence can be moved back to its original position, or even farther in, giving the outer section its own needed R&R. This keeps the entire turf surface as uniformly intact as possible from the inside post position to the outermost racing slots.

Uninvited poultry are another noteworthy problem for these NYRA turf courses. In the last 10-15 years, changing migratory patterns of Canada geese (due to generally warmer temperatures) have brought much larger geese populations to New York, presenting three key challenges for turf managers.

"DENSER TURF ALSO CREATES SMOOTHER SURFACES FOR HORSES TO RUN ON, ESPECIALLY WHEN THE GRASS HEIGHT'S BEEN LOWERED." - PORCELLI

consultations with Dr. Rossi in 2002, which resulted in an enhanced turf cultivation and maintenance program for us.

"We introduced that program at Saratoga on an experimental basis," Porcelli says. "Early indications are it's working well, and when that's confirmed in another year or so, we'll roll it out at Belmont and Aqueduct too."

The enhanced program features lower grass height (in periods of normal weather), cut to about 4 inches, and use of a plant growth regulator (Primo-Max). Porcelli applies the PGR at five ounces per acre to significantly increase grass density. Additionally, as turf growth is systematically slowed, less frequent mowing becomes a secondary benefit.

"It makes a critical difference because a thicker turf holds up better to the wear and tear caused by the horses, and makes repairs easier. Denser turf also creates smoother surfaces for horses to run on, especially when the grass height's been lowered," says Porcelli.

Getting that turf grass growing in the first place is, of course, another challenge altogether. All three tracks use a Kentucky bluegrass, mixed-resistance seed blend that includes several sub-types: Jefferson, Liberator, Rambo, and Midnight. It is a custom-crafted formulation that has proven itself over the years for New York's particular soil and climate conditions.

Under the watch of foremen who report to Porcelli and Assistant Track Superintendent Peter Sinacori, crews of 13 men follow seeding at Belmont and Aqueduct with ammonium nitrate (34.0) applications in early spring at the rate of 125 pounds per acre, along with 230 pounds per acre of 19-5-9 fertilizer.

In late May, these applications are repeated. Fungicide and herbicides are introduced in late April, with fungicide applications continuing at 7-10 day intervals through the end of September. Liming is done in December, if deemed necessary, at the rate of one ton per acre.

Schedules and application treatments vary somewhat for the more northerly, and more inland, Saratoga track.

"A primary goal for us is always keeping an ideal moisture ratio," Sinacori says. "Too much or too little moisture can lead to problems quickly, so the moisture status of turf requires constant monitoring."

In recent years, irrigation has become a far easier task through use of automatic pop-up sprinkler systems at Belmont and Aqueduct. At Saratoga, however, perhaps in keeping with its classic, venerable image, irrigation is still done manually and is more labor intensive.

"Actually, if the money was there, we'd probably automate Saratoga's irrigation too," Porcelli says.

Even under ideal conditions, any well-tended horse racing turf course takes quite a beating after a few weeks. So Jerry Porcelli's crews must regularly maintain rigorous discipline.

The goose feces makes footing far more slippery and treacherous for horses at full gallop, and geese devour grass blades right down to the roots.

On top of that, the actual presence of geese on the turf course during a race


These dogs work hard but do not require much chow. Jerry Porcelli, left, and Peter Sinacori pose with two of the plastic border collie statues that keep goose traffic off the track's turf.

increases the odds of injury to horses and/or jockeys. Consequently, Porcelli has adopted a zero-tolerance policy for geese, retaining the services of a Long Island firm, Geese-Off, to handle such sticky problems in a humane way.

Geese-Off's strategies have been enormously successful, he says. By using specially trained border collies in the early morning hours and deploying very real looking, plastic border collie statues for the rest of the day, the potential threats of goose traffic on turf grass can be held in check. Geese-Off also uses high luminescence products (lights and lasers), and pyrotechnic devices that do not harm the birds.

For Jerry Porcelli, Pete Sinacori and the hardworking crews that carry out their carefully devised strategies, grounds keeping success means healthy, luscious looking turf grass courses for some of the nation's best race horses and jockeys to compete on. It also means great recreational fun for the sporting public. ST

BY **NORRIS LEGUE**

Trowel application for "high-grab" adhesive for bonding artificial turf seams.

Artificial turf seams are potential hazard

An artificial turf surface, whether football field or playground, is only as good as its joined seams because historically seams are the weakest link of a good installation. Joined seams are subjected to high stress from athletic activity, maintenance vehicles, vandalism, and dimensional movements due to weather changes. A seam break can cause a completely loose field, tripping or injury due to open seam, and other hazards.

The two most widely used methods of joining seams are to glue them together on top of a wide-width, adhesive coated fabric or other adhesive-coated subsurface and/or sew them together. Benefits more than double when both are done, but most often it's one method or the other, not both.

An assembly is less likely to break if the stress is distributed evenly over a large area, one big reason why the role of adhesives is increasing versus mechanical fasteners. With fasteners, holes are made in both surfaces and the fastener passed through them for joining and securing, concentrating stress at those points (rivets, nuts/bolts, wire, thread, staples, cord, etc.). Thread or cord is used for "sewing" systems.

Using adhesives spreads the bond over a much larger area. In total gluedowns there of course are no joined seams, easing that stress and also preventing "dancing lines" on the field.

Most but not all of the new infill-type fields are not glued to a solid base but instead rely only on glued or sewn seams to hold it together. A broken seam means a loose field. With glued seams, the wider the tape and adhesive on it, the greater the seam strength and stress distribution. With sewing, the quality of the sewing and durability of the thread are very important provided the thread is not cut. In either case, fixing a broken seam on a loose-lay field is tougher compared to a total glue-down field.

Installation

The adhesive must have three key handling properties to be economical. It must be usable under variable weather conditions; have high green strength due to its tacky gripping properties ("high grab") to overcome wind, rain, and turf curl during installation; and a wide outdoor working-time window. That's why one-part, high green strength urethane adhesives are preferred over epoxy, hot-melt or both, as well as two-part, oily low-green strength urethane adhesives.

Trying to "save pennies" on adhesive can cost much more down the road, though many insist on trying. Secondary to low price is an adhesive's long-term exterior durability and installation handling properties.

For seam reliability, the order of preference is: Total gluedown with both glued and sewn seams; total gluedown with glued seams on wide tape; loose lay with glued seams on wide tape; loose lay with sewn seams; and loose lay with edge gluing only.

Remember, when gluing, select an adhesive with handling properties designed to fit the turf system being installed. ST

Norris Legue is president of Synthetic Surfaces, Inc., www.nordot.com.

An Olympic feat

BY **DAVE SALTMAN**

Editor's note: This article originally appeared on the website of the British publication Pitchcare. *It has been edited for a US readership; to see the entire article, visit www.pitchcare.com.*

This story is based on an interview with Simon Jacob from GreenTech ITM Ltd., the company responsible for providing the Athens Olympic stadium pitch in time for the track and field events. This was a joint venture for GreenTech UK and USA.

"The contract came about in August 2003, we were contacted by Jack Morton, the Opening Ceremony Contractor, who was organizing special effects for the Greek Olympics," Jacob said. "They had decided to construct a lake in the middle of the stadium and did not want grass in the stadium for the opening ceremony. The original lead came through Pitchcare's website.

"The lake was to take up the entire pitch surface with a 25m hole in the center of the lake. There were also tunnels under the pitch for performers to gain access and nobody seemed to have an idea of how to overcome the transportation of a last-minute pitch. The entire process took 6 months of deliberation before we were awarded a signed contract," Jacob said.

"We had wanted to and suggested that the field was constructed during the autumn of 2003 by seed and Bermuda sprig so that the pitch could become established. However, we did not get the contract until March 2004. We were contracted to supply the product as well as the design framework and consultancy to oversee the process.

"We specified Bermuda 419 grass, but there were no Bermuda 419 grass fields in Greece. Greece is in a transitional zone so with the hot summers they were able to use Bermuda grass and then overseed for the winter with Rye grasses," said Jacob.

"However just looking at their climatic records, we could not believe that there were little or no Bermuda fields being cultivated."

The main contractor (Aktor) decided to use a local turf company, Hellasod ("Greek turf"), the main Greek turf contractor. They gave them the contract to build the field and supply all the materials, rootzone, gravel, and turf. Their remit also involved the filling of the modules, while another local company was awarded the contract to move the modules. So with the various contracts in place we had a Greek turf company and transport company, with GreenTech supplying the modules, design, and maintenance expertise for the project," Jacob said.

"We appointed to the task Matthew Frost, who had been working most recently at the prestigious Hong Kong Football club, and a lad from Michigan State University, Matt Anderson, as well as Tim VanLoo a Michigan State University graduate student, who had great experience from the Spartan Stadium Construction and installation. Both of them joined Matthew in Greece from April 1 this year.

"When we were awarded the contract in March, we had to get 7,128 ITM modules to Greece, by the end of April! There were penalty clauses in the contract amounting to quite a few thousand Euros if we didn't meet the deadline. The pitch build started on April 20 at the construction site near the airport and finished May 15," said Jacob.

"We were manufacturing the modules and delivering them in batches, 396 modules per lorry load, 18 loads in total, we also needed to manufacture sleeves that sat around the modules to retain rootzone material (every other module had a sleeve). Despite the short time scales we were able to meet the deadlines and the construction went smoothly.

"So we could start the construction we brought over Dr. Trey Rogers from Michigan State to find an appropriate rootzone. Aktor appointed the University of Athens to carry out a study on the system and to undertake all the quality control. They did all the testing of the rootzones we had inspected. The root zone was 90 percent sand and 10 percent soil; it met the specification and was fine. Before the modules being filled with this rootzone, we used 4-6mm gravel in the bottom of each one," said Jacob.

"Hellasod did have some Bermuda turf but it was not fantastic. We tried to source

"WHEN WE WERE AWARDED THE CONTRACT IN MARCH, WE HAD TO GET 7,128 ITM MODULES TO GREECE, BY THE END OF APRIL!"

some better material, but this meant importing turf from abroad, which wasn't ideal. In the end we decided to go with the local Bermuda turf, but for the system to work in the time scale it had to be washed. We had to teach Hellasod new techniques about washing turf. There were no turf washing machines in Greece. So the head of their company decided to make their own bespoke washing machine. It proved to be a well-engineered machine.

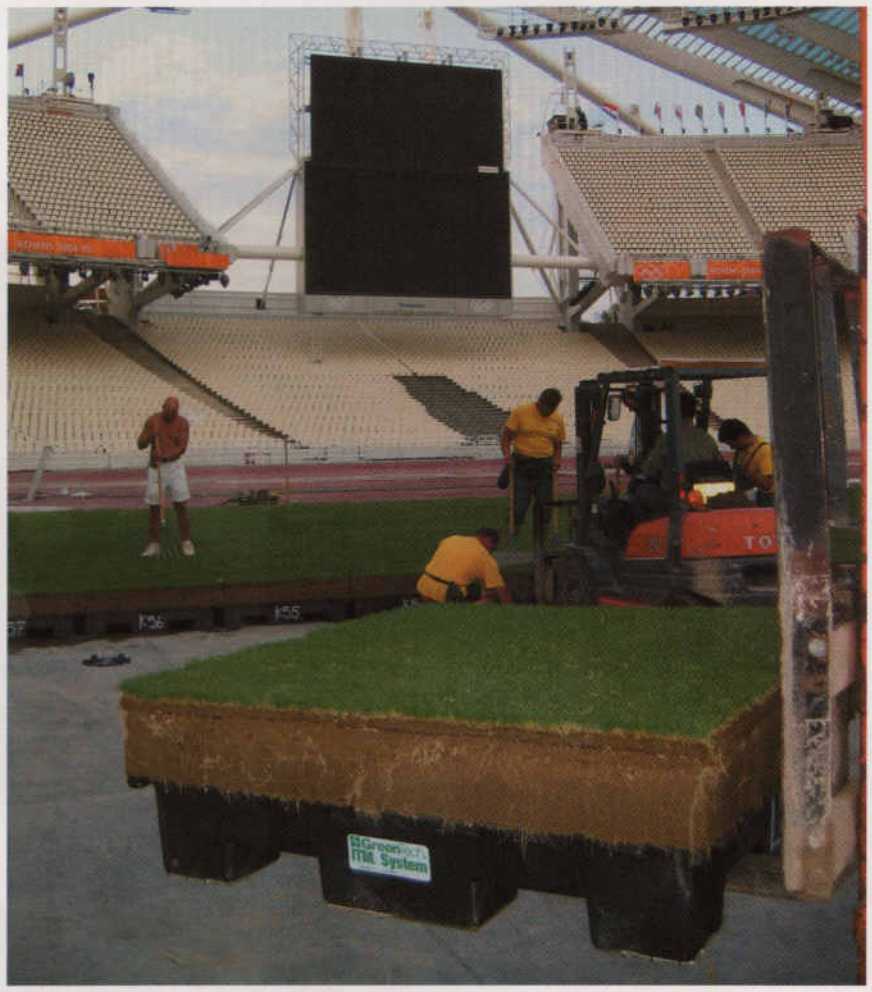
"Because the Olympic track was going to be at a certain level, built on a concrete base inside the stadium, the modules from the concrete to the top of the turf had to be 350mm deep. This meant that there was a depth of 250 mm of rootzone on top of the gravel. Once the field was built outside, we had to implement a vigorous top-dressing and maintenance program to get the turf up to scratch. Although the turf had been washed it had come in like sprigs.

"Time was short and the main contractor wanted us to do a dry run to see how long it would take to move the modules into the stadium. (The main move would only allow us a 60-hour period to get these modules moved into place within the track area, due to all the other works going on at the stadium.)

"We conducted a test move on June 20; the Bermuda turf was only 4 weeks old on the modules. The young roots were still developing and filling the modules, we moved about 1,000 modules against the clock to test the time. Then moved them back again a couple of days later. We carried on with the regular maintenance program and also did some nutrition testing from that time until the main move on August 15. "Our two lads were doing most of the maintenance themselves, with some labor provided by the Greek turf company. We had to organize the machinery, fertilizers, and chemicals, it ended up being a very good job," Jacob said.

"The Bermuda grass took to the modules very well. Every module had been numbered during the original construction. This meant that every module when taken from the construction site into the stadium could be placed back into the identical position.

"The construction site was on a crushed stone base (which was not what we had asked for. We had asked for a solid tarmac or concrete base). So at the end of the day



we had to make do with the stone base. In fact the Greeks did a great job on the site with the stone surface, it was laser-leveled and compacted with rollers, there was full irrigation supplied, security fencing and some security personnel there 24 hours every day.

"The two months growing in the turf were not easy, the weather was much cooler than expected, and the Bermuda grass took time to establish, but by the middle of July, temperatures picked up and the Bermuda grass started to flourish. The pallets were covered for a week at the beginning with germination sheets, however once the temperature rose, the difference in color and vigor was unbelievable.

"Every truckload could take 22 modules, so we ended up with 265 truck movements, each movement a 20-minute drive from the construction site to the stadium. We employed 12 flat bed trucks, all the trucks (as well as the modules) numbered. Because of the amount of other people/vehicles involved at the Olympics, the trucks were not allowed into the stadium itself, so a conveyor belt was made available to move the modules from the trucks into the stadium. The conveyor belt was 110 meters long and stretched from outside, through a service tunnel, over the track into the middle.

"With the first module arriving at 2pm on Sunday we continued to work around the clock, with the last module in place on Wednesday at 2am, 60 hours later. There were two forklifts lifting modules from the trucks onto the conveyer belt and two forklifts lifting them off the conveyor inside the track. Then there were two more forklift trucks doing the final placing. At the construction site we had another four forklift trucks working, moving and loading the modules on to the numbered trucks. Two cutting crews at the construction site used templates (the size of the module) to cut around the modules (cutting down two sides with a 4 inch blade.) They started in the middle working out either side," said Jacob.

"The irrigation at the stadium had been sunk into the concrete base. As the relevant modules were put in place we had flexible hoses that were fed up into the module and Rain Bird sprinkler heads were fitted. The move went well, although it slowed slightly towards the end as we ran out of working space. The fitting of the irrigation, cutting some modules to fit the oval shape of the stadium base, fitting timing and clock systems for judging, moving the conveyor also all took time to put in place.

"Every module was watered at the construction site to steady the rootzone and keep the integrity of each module. As each module was removed from the construction site floor the growing sleeves were cut off, at this point it was great to see that the rooting depth was 350mm. The root mass holding the exposed root zone in place. Bearing in mind the temperatures during all this activity were averaging 42 degrees everybody did a great job.

"We went above and beyond the original contract, but it's the Olympic games so we made sure that the job was done correctly. Our lads have worked with precious little machinery; all they have to maintain the pitch is a Jacobsen ride-on triple mower, a Kubota tractor, and a Dennis cylinder mower. **ST**

Dave Saltman is editor of Pitchcare, dave@pitchcare.com.

Toro at Indy
A group of FFA students from Indianapolis' STAR Academy listens in as a member of the Indianapolis Motor Speedway grounds crew discusses turf and grounds management principles and careers during a career and safety day sponsored by The Toro Company, the official provider of turf equipment for the IMS's 750-acre grounds.

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