



Modular makeover at Michigan State

Photos by Kurt Stepnitz, MSU Plant Research Lab

BY ERIC ADKINS, CSFM

This fall, for the first time in 33 years, something will take place at Michigan State University's Spartan Stadium that most people take for granted. College football will be played on a natural grass surface.

A system of 4,800 GreenTech ITM modules was installed in Spartan Stadium in June. The modules are plastic, measure 46-inches square, and have channels every 22 inches on all four sides.

Initial stadium construction started after the last home game in December 2001. The old AstroTurf was removed and lowering of the field surface began. The old asphalt pad and 12 inches of gravel base were removed to accommodate the height of the new modular system. A drainage system surrounds the outside edge of the new asphalt pad. A 1-percent slope of the asphalt pad will allow excess water to flow to the perimeter drain lines.

Underground irrigation lines and a new irrigation well were completed before the new asphalt surface was installed. Four irrigation lines run the length of the field, approximately 60 feet apart, beneath the asphalt. Down both sidelines is a series of vents that will allow for the air movement throughout the modular system. Warm air can be forced through the sideline vents and into the channel system of the modules, extending the growing season in East Lansing.

Homegrown turf

Growing the turf started at the Hancock Turf Research Center in May 2001. Final assembly and field construction was completed by the Clark Companies of Delhi, NY. During the final field construction phase, root zone materials were added to bring the height of each module to 12 inches. Turf Center manager Mark Collins and the research support staff began the seeding and grow-in phase. The modules were seeded

at 1.3 pounds of seed per 1,000 square feet. Nine varieties of bluegrass were used: Limousine, Coventry, Rugby II, Unique, Midnight, Moonlight, Northstar, Champagne, and Serene.

The root zone was composed of 90 percent coarse USGA sand with the remaining 10 percent a combination of silt and clay. Fertilization began as turf growth started and was continued at 2-week intervals. During the first 6 months of growing time, the turf received more than 6 pounds of nitrogen and nearly 6 pounds of potassium per 1,000 square feet. Phosphorus applications totaled more than three pounds per 1,000 square feet during the same 6-month time frame.

On June 10 this summer—after 13 months of preparation—moving day finally arrived. The turf was in excellent shape with a healthy, mature root system that seemed to be growing right out the bottom of the module. The nine varieties of bluegrass were becoming very aggressive and competitive with each other. A small thatch layer was starting to form, which is why seed was planted so far in advance of the actual moving day. The result was like bringing 4,800 individual football fields into Spartan Stadium.

As the modules were assembled in May 2001, a 12-inch high grow-in fence surrounded every module. This fence acted like a guard preventing the modules from growing together and also made separating the modules very easy. Forklifts pulled apart each individual module. Separated modules were loaded onto wagons for the 2-mile journey to the stadium. The University Farms staff, led by farm manager Barry Darling, was in charge of transporting the modules from the Hancock Turf Center to the stadium. On Monday, June 10, the first day of moving modules, eight farm tractors with single wagons were used. Each wagon could transport eight modules. Tuesday through Thursday the pace increased. Four tractors pulling two wagons became the



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process that worked the best. Each set of a tractor and the loaded wagons weighed more than 30,000 pounds. Each module weighed more than 1,300 pounds. Each driver and tractor averaged eight trips a day between the Turf Research Center and Spartan Stadium.

Pieces of a puzzle

As the modules entered the stadium, forklifts unloaded them and placed the modules back in the same order that they occupied at the Hancock Turf Center. By placing each module back in the same order, edges and seams fit back together tightly. Foot locators helped with proper placement of each module, which allowed installers of the modules to make tight fits and maintain proper alignment. Before each module was set in place, its two outside edges received a gasket-type sealer, a material found commonly on the bottom of most garage doors. To help seal out wind and rain, it was used as the seal between the modules. The tiny gap that occurred at the intersection of four corners was filled with a small amount of a foam sealer. This will ensure that no root zone material will move down through the module edges or intersections.

When the installation team reached the rows that contained irrigation sprinklers, they installed the sprinkler into the module by using a hydraulic flex pipe and fittings. Once the irrigation heads were determined, 8 inches of root zone and 4 inches of birds eye pea gravel were removed from the module with a golf course cup cutter. A hole sawed through the bottom of the module allowed the irrigation head to slip into the module. From the asphalt surface, a valve box connected the sprinkler to the irrigation line, by the use of a 1-inch diameter flex pipe. All of the 16 Toro 640 irrigation sprinklers within the actual playing surface were installed this way. Perimeter sprinklers were attached to the outside retaining wall.

Our local Toro Equipment and Irrigation Company, Spartan Distributors, which donated all of the irrigation heads, did an excellent job on the installation. Even though they practiced this procedure at the turf research center, the actual installation was much harder than anticipated, but they managed very well.



Days two through four became routine. The University Farms personnel were able to keep up with the demand of supplying modules to the stadium at the rate of more than 100 per hour. The field installation company, Kares Construction, was installing modules at that same rate. By the end of day four, 85 of the 100 rows of modules were in place. Kares crews worked hard to finish project the by the self-imposed Friday deadline.

During the move-in process, moisture levels were monitored to insure that newly exposed edges didn't become too dry. Staffers at the research center mowed and irrigated each module daily. Maintaining proper moisture in the module made it much easier to separate at the Turf Research Center. As the number of modules increased inside the stadium, proper turf maintenance continued. Thanks to Spartan Distributors, Toro mowers began mowing the Spartan Stadium surface on the afternoon of June 11. Some modules were transported, installed, and mowed all in the same day. By the end of the third day of installation, half of the irrigation system was operable.

As the last day approached, we knew that the installation process would slow because the workspace was becoming smaller. The double wagon tractors went back to single tractors and wagons. Forklifts gave way to pallet jacks. The last two modules were lowered into place by the use of straps and a sky jack. As the last module approached the stadium, the MSU Department of Public Safety provided a police escort into the stadium, acknowledging the momentous occasion. The last row was installed and the installation completed on Friday, June 15, to the delight of everyone involved.

For the first time in 33 years, grass was back in Spartan Stadium. For many people at Michigan State University, it is a dream come true. For others, it is a job well done. **ST**

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