Here is a listing of companies that construct or renovate athletic fields:

- **ATD Sports Field Specialists**
  - Garfield Heights, OH
  - 216-581-4990
  - www.atdsoftsportsfield.com

- **Alliza Sports Turf**
  - Avon, KY
  - 270-842-0473

- **Alpine Services, Inc.**
  - Gaithersburg, MD
  - 800-292-8620
  - www.alpineservices.com

- **American Civil Constructors**
  - Lititz, PA
  - 860-485-0219

- **Athletic Fields, Inc.**
  - Cartersville, GA
  - 770-382-7284

- **Athletic Fields Tennessee**
  - Humboldt, TN
  - 866-287-4763

- **Athletic Field Services, Inc.**
  - Oregon, OH
  - 419-836-9730
  - www.athleticfieldsservices.com

- **Ballard Sports**
  - Cary, NC
  - 919-454-8181
  - www.ballardsports.com

- **Beals Sport**
  - San Clara, CA
  - 408-985-7200
  - www.bealsports.com

- **Robert A. Bothman, Inc.**
  - San Jose, CA
  - 408-299-2277
  - www.bothman.com

- **Carolina Green Corp.**
  - Indian Trail, NC
  - 704-753-1707
  - www.cgcfields.com

- **Championship Turf Surfaces**
  - Harwinton, CT
  - 860-485-0219
  - www.championshipsurfes.com

- **Colony Landscape & Maintenance, Inc.**
  - Alviso, CA
  - 408-941-1090
  - www.colonylandscape.com

- **Creative Landscape & Irrigation, Inc.**
  - Maugansville, MD
  - 301-745-5737
  - www.creativeirrigation.com

- **Diamond Athletic Turf, Inc.**
  - Stow, MA
  - 978-978-0344
  - www.duraturfturf.com

- **Duraturf Service Corp.**
  - Richmond, VA
  - 800-358-8283

- **Fielders Choice Inc.**
  - Pearland, TX
  - 888-853-4353
  - www.fielderschoiceinc.com

- **Gale Associates Inc.**
  - Weymouth, MA
  - 781-335-6465
  - www.galeassociates.com

- **Geller Sport**
  - Boston, MA
  - 617-523-8103
  - www.gellersport.com

- **Grant Sports Fields**
  - Columbus, GA
  - 704-591-8260
  -Layer Lyndacmpioning.com

- **GreenTech, Inc.**
  - Savannah, GA
  - 912-353-7944
  - www.greenetchtm.com

- **Greenway Services**
  - Horsham, PA
  - 215-343-0910

- **Gregori International**
  - Miami, FL
  - 305-653-7393
  - www.gregori.com

- **D.A. Hogan & Associates**
  - Seattle, WA
  - 206-285-0600

- **Huffman SportScape Inc.**
  - Independence, KY
  - 815-923-4321

- **Hummer Turfgrass Systems Inc.**
  - Lancaster, PA
  - 800-872-8873
  - www.usaturf.com

- **The LandTek Group, Inc.**
  - Amityville, NY
  - 631-691-2381
  - www.landtekgroup.com

- **Lawn Care Unlimited**
  - Lee's Summit, MO
  - 913-682-6706

- **Mercer Group, Inc.**
  - Troy, OH
  - 937-335-7100
  - www.mercergroup.com

- **Mid-Atlantic Turf, Inc.**
  - Gaithersburg, MD
  - 301-990-0315
  - www.mid-atlanticturf.com

- **Midwest Sport, Inc.**
  - Burtonsville, MD
  - 301-241-0070

- **Nolan Thomas &Co.**
  - Independence, KY
  - 715-341-2633

- **Northwest Sport, Inc.**
  - Calgary, AB
  - 403-210-1010

- **Oklahoma Turf, Inc.**
  - Stillwater, OK
  - 405-376-8876

- **The Motz Group, Inc.**
  - Meering, WI
  - 617-523-8103

- **Realty Landscaping Corp.**
  - Phoenixville, PA
  - 610-631-2523

- **Rettler Corp.**
  - Stevens Point, WI
  - 715-341-2553

- **SPTORTEXE**
  - Fort Worth, TX
  - 956-892-6000

- **Sports Field Consultants**
  - Duncanville, TX
  - 817-238-2010

- **Sports Turf Company**
  - Lebanon, PA
  - 800-233-5174

- **SRI Sports**
  - Bathsburg, VA
  - 803-957-3115

- **Sports Turf Company**
  - Whitehouse, PA
  - 800-373-9208
  - www.sports turf.net

- **Team All Sports**
  - Cincinnati, OH
  - 513-241-6100

- **The Motz Group, Inc.**
  - Cincinnati, OH
  - 513-532-6452
  - www.themotzgroup.com

- **Turf Services**
  - Spring Lake, MI
  - 616-642-4975

- **U.S. Athletic Fields**
  - Skiltin, MA
  - 609-446-2845

- **Van's Enterprises**
  - Mundelein, IL
  - 847-397-7828

- **Wilson & Associates**
  - Lexington, SC
  - 803-957-3115

**Contact Information**
- **Team All Sports**
  - Cincinnati, OH
  - 513-241-6100

- **Nolan Thomas & Co.**
  - Stovall, NC
  - 919-492-6478

- **Turf Services**
  - Spring Lake, MI
  - 616-642-4975

- **U.S. Athletic Fields**
  - Skiltin, MA
  - 609-446-2845

- **Van's Enterprises**
  - Mundelein, IL
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- **Wilson & Associates**
  - Lexington, SC
  - 803-957-3115
ne is buried behind the mound of Baltimore's Oriole Park at Camden Yards, the other in right field. The crowd can't see them, nor can the players. In fact, only a handful of people know they are there, entrenched just 2 inches below the lush green ball field. What are these objects buried beneath one of America's most beautiful ballparks? If you guessed Orioles season's tickets or Cal Ripken's old batting gloves, guess again. They are data loggers—tiny, battery-powered devices that Oriole Park groundskeepers use to continuously monitor soil temperature throughout the season. More specifically, the loggers are used to record and time-stamp field root-zone temperatures over month-long intervals, at which time the data is offloaded onto a PC for graphing and analysis.

"We try to track field conditions to the greatest extent possible, and part of our strategy is to use data loggers as a record-keeping mechanism," explains Al Capitos, head groundskeeper at Oriole Park. "By keeping track of the temperatures over time, we can establish trends, which ultimately puts us in a better position to proactively deal with turf diseases associated with high soil temperatures."

Capitos monitors the soil with HOBO H8 data loggers from Onset Computer Corp. The H8 incorporates a microprocessor, an internal temperature sensor, and a user-replaceable battery into a hard-plastic casing slightly larger than a matchbox. By burying one H8 behind the pitcher's mound and the other in the outfield, the groundskeeping team can profile two distinctly different microclimates that exist at the stadium. Each logger is housed in a moisture-resistant enclosure, and takes temperature readings every 30 minutes.

After a month's worth of data has been collected, groundskeepers "unearth" the data loggers and offload the data from each onto a PC. Using Onset's software, the data is immediately translated into easy-to-read graphs that clearly show spikes and drops in root zone temperature. The data is then matched up with soil temperature readings that are taken manually with a probe, a process that Capitos refers to as "double-measuring."

"Some people may think this is way too much information, but we believe that having as much temperature data as possible is key to really getting in touch with the field," he says.

One area where data loggers have really proved their value at Oriole Park is in crabgrass prevention. In order for a pre-emergent herbicide to be effective in preventing crabgrass, the field must be sprayed after the soil temperature has been 55 degrees F for at least 4 days. According to Capitos, historical data recorded by the loggers over the past several seasons helps them predict when this block of time is likely to occur.

"The year-to-year data allows us to almost predict exactly when the temperatures will break," he says. "Knowing this helps us make good decisions as to when we need to spray. After all, the chemicals we spray on the field are expensive, and we have an obligation to be responsible applicators. I sure wouldn't want to be the guy who goes out and puts down chemicals ineffectively."

Capitos now trains new turf management interns on using the products. "We have interns from a variety of schools, including Penn State and Iowa State, and it's great to get them involved with the equipment so they can visualize the collected data and begin learning how to predict trends. It's fun for the students, and they can take the knowledge and experience with them after they graduate and go on to manage their first field."

Since the data loggers were originally buried in the spring of 1999, they have been functioning without any problems. Capitos has been impressed with their durability, and feels that any ballfield, especially those with a variety of microclimates, could benefit from the technology.

He says, "The most important thing is that we can now manage our field proactively instead of having to catch up with problems that we didn't expect."


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SAVING A WORLD CUP PITCH

When officials look back on the situation, it could have been a tremendous national embarrassment. South Korea’s prestigious Daegu Stadium was the site for the FIFA World Cup soccer games and the first match was scheduled for June 6, 2002. However, just months before the match, the turf started falling apart during practice exhibitions.

“The South Korean press started to get wind of the situation and it was a potential public relations nightmare for the stadium, the city and South Korea,” recalls Jeong Nam Choe, South Korea sales manager for Novozymes Biologicals, one of the resources called in to help fix the turf. “However, a cooperative effort quickly helped turn the situation around before the start of the World Cup.”

Daegu Stadium is Korea’s largest, with room for 65,000 fans. Construction of the new stadium was completed on May 20, 2001. It was a coup in itself for the stadium and South Korea to host the World Cup games and city officials had great expectations for the matches.

When the stadium was constructed, the field’s pitch was initially established with sod but it did not take root. During an exhibition game in the fall of 2001, the newly hired head coach of the South Korean team noticed the turf was uprooted and the players were sliding on the field. He complained to the mayor of Daegu City, who personally came to inspect the turf.

Recognizing that he had a serious problem on his hands, the mayor ordered the grounds manager, Soung Yong Tak, to find an immediate solution. “The grounds manager immediately consulted with the Korean Turf Research Institute (KTRI), which was called in to help,” Choe says.

A microbial solution

In the case of Daegu Stadium, KTRI recommended the use of TurfVigor to correct the root quality problem. TurfVigor contains a formulation of beneficial microbes and a blend of nutrients and biostimulants to provide turf with the compounds it needs for growth, health, and stress tolerance. For the Daegu turf, the product helped establish the turf by promoting healthier roots and more efficient water uptake. “I remember that the groundskeeper was doubtful that the product would work at the time, but he had no choice. He went with KTRI’s recommendation,” recalls Choe.

TurfVigor was applied according to the product label starting in October 2001. After timely watering and a month of waiting, the turf managers noticed that the rooting depth increased to 10 centimeters or more and the entire turf condition, including color and growth, soon started to improve. It wasn’t long before the stadium had the best pitch of all the Korean football stadiums (there are 10). Once the roots were established, exhibition games were resumed on the turf without incident. And in June 2002, the stadium and the city hosted three first-round matches and the third-place match on a healthy, showcase turf. As Choe recalls, there was a collective sigh of relief.

EVEN DAEGU’S MAYOR DEMANDED THE GROUNDS MANAGER TAKE ACTION

This story was provided by Novozymes Biologicals, a worldwide leader in the research, development, and manufacture of applied microbiology for commercial use.