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Tracking stations monitor weather for the pros

Turf managers for the Philadelphia Eagles, Miami Dolphins, Florida Marlins, and Cleveland Browns are counting on new professional grade tracking stations, cameras and ground sensors to deliver instantaneous, on-site weather conditions.

"The hourly forecasts are extremely helpful," said Rick Wright, director of field operations for the Dolphins and Marlins. "We're now able to 'see' approaching storms, even at night, and to alert the owners and coaches to possible threats. Streamer also let's us know when there's a possible 'window' on a stormy day. No sense in warming up a player if we're going to be rained out."

Professional Streamer, a WeatherBug product, delivers live weather data online, any time, in one interface. Team personnel can remotely plan for the next practice and then equip and prepare the players for the day's activities, such as selecting wet vs. dry practice shoes. Customizable views of playing field conditions feature live, neighborhood-level weather and wind readings, local radar, weather contour, satellite, camera views, and forecast updates. Pan and zoom capabilities enable users to observe up to five layers of overlapping weather data on the same map, including custom data, to forecast potentially hazardous conditions such as lightning or tornadoes.

"With live, on-site weather conditions at our stadium and training facility, we see significant advantages to everyone involved with the Eagles," said Philadelphia Eagles' sports field manager, Tony Leonard. "We've already saved time, manpower, and resources by being able to service the playing field and equip our staff and players to suit the weather and playing field conditions. Now, we can equip and prepare our players for minimal injury and optimal outcome and deal with potential weather hazards."

Management can select up to 23 warnings for storms, tornadoes, floods, hurricanes, non-precipitation, marine advisories, fire weather, civil emergencies, and more. They can also monitor lightning, hail and heavy precipitation and set alert thresholds for low and high temperatures, heat index, average and current wind speeds, wind chill, wind gusts, rain rate and daily rain accumulation.

The product allows insight to historical data, which helps them anticipate and prevent potential hazards based upon past experiences with similar, hazardous weather conditions.

Leveraging the network of 8,000 WeatherBug Tracking Stations nationwide and more than 1,000 cameras, the Professional Streamer features live weather conditions at the stadium and training camp grounds. Also, ground sensors have the added capabilities of monitoring soil moisture, leaf wetness, and evapotranspiration to better manage and maintain their facilities and play surfaces.

Edited by Eric Schroder

How laser leveling works

BY **CHRIS HARRISON**

Everyone promises to do his or her "level best" on any job, but with laser-guided equipment, the term takes on a whole new meaning.

The technology behind it is complex, but the concept and implementation are fairly simple. Basically, laser leveling begins with a 360-degree rotating laser that allows the operator to set "falls" or slopes, either to plan or to client specifications.

As the laser spins, it creates a plane and sends signals to the receiver that is located on a mast attached to the blade. This then sends an electrical signal to the computerized controls on the blade. These signals control a valve that moves the blade up and down. This blade movement moves material from high spots to low spots to achieve the level required.

By adjusting the speed of the blade movement, tighter tolerances are achieved.

"Our grading systems work independently from the tractor and adjust to grade automatically," according to Ray Joling with Florida-based Southern Laser & Laser Leveling (www.laserleveling.com). He says all that the operator needs to do is steer the tractor to achieve excellent results.

Technically speaking, there is no difference in the performance between the 3-point hitch and pull-type box blade grading systems.

While the 3-point hitch is more maneuverable than the pull-type box blade (because it is mounted closer to the rear of the tractor) each grading system provides quarter-inch accuracy in the finish grade.

LaserLeveling's GradeMaster Pro 3 point hitch-grading system.

Getting started

While the overall approach for any field is similar, the desired result varies. Baseball and softball fields, with their conical design, usually are designed differently than the run of other sports turf like soccer, football, and comparable areas that generally are crowned in the center.

Even on similar fields, there are significant differences both in control systems and in the manner in which the operator sets up and conducts the leveling process, says Bill Barkshire, owner of Barkshire Laser Leveling, Inc. (info@barkshireleveling.com, San Juan Capistrano, CA).

"One of the reasons laser leveling continues to be a specialized operation is that there are 'right ways' and 'wrong ways' to do the job," he says. He says that many general contractors struggle to achieve the appropriate tolerances because their staff does not understand the fundamentals of laser leveling and the process required.

His company has another advantage over the Yellow Pages dozer operator: Barkshire designed and manufactures the blades they use. "Our systems incorporate the latest laser technology and highly maneuverable equipment resulting in tight tolerances that meet planner specifications for falls," he says. "Compaction is vital to reduce settling after leveling and integral to our system."

Laser leveling is used at all kinds of sports facilities, from the professional stadium to local ball fields. While it is good to have an expert like Barkshire or Laser Leveling do the finish work, they do not have to be around for the whole job.

"A contractor needs to know what grade has been specified for the field or how an engineer or architect has laid out the field," Joling says.

The most economic approach for a local municipality or college is to have its grounds crew go ahead and do the prep work, says Berkshire. "They typically have the manpower to water, roto-till and loosen the soil," he says.

After the crew has done the basic earthmoving, Barkshire's people would come in, re-grade the surface and do the fine-tuning.

"We work with a lot of park and recreation people that way," Bill says. Although they are willing to do the entire project, having the rec staff work on the job is more efficient. "Typically park and recreation can save a lot of money by doing the basic work themselves," he says.

"Preparation is really a key to timely and quality finishes," he adds.

The professional levelers want all turf areas to be stripped and rototilled to loosen the soil. This is because excess organic materials add to the time for finish and also result in less precise lasering.

Irrigation must be marked and, in most cases, capped or buried.

After that, the equipment takes over. Like most systems, on the jobsite Southern Laser's grading systems are controlled automatically from a laser transmitter.

The laser is mounted on a tripod and positioned above the ROPS of the tractor. The laser provides a 360-degree plane of light over the entire jobsite as a reference, similar to an airport beacon.

A 360-degree receiver mounted on the box blade sees the laser light and signals the hydraulics on the box blade to raise or lower the cutting edge to stay on grade.

To begin a project, the laser is positioned at any height above the cab of the tractor, Joling explains. The box blade is benched to a starting elevation or desired finish grade and the 360-degree receiver is set to the laser light. From there, the operator has a constant reference to grade and the box blade automatically adjusts to the laser light.

As a rule of thumb, expect to deploy five horsepower for every foot of scraper. For example, a 6-foot scraper will typically require a 30-hp tractor.

Systems like Barkshire's allow for one-man operations. That person is responsible for mobilizing tractor/blade, setting up the laser control equipment and completing the operations.

Where to level

"Because laser leveling is a cost effective operation, all jobs could benefit," Barkshire maintains. As compared to hand-leveled projects, laser-leveled projects

result in longer lasting playing surfaces that are safer and with better drainage, he says.

"With increased demand on fields, clients often focus on playability, keeping their fields in service regardless of weather conditions," Barkshire says.

Experts maintain that laser leveling is particularly critical in new construction where attention to the subgrade, matching profiles, and the finish grade continually result in better products for clients.

"Many of our clients have recently installed new fields that do not offer the playability and conditions they require and schedule our services to correct only a short time after construction," Barkshire says.

Of course, the finished product is only as good as the building material you are working with. Sandy soil is always the preferred choice.

Joling says their laser grading systems are well suited for most jobsite applications. "However, our box blades are designed to be a finished grading system. The material must be loose and able to be moved about."

Like Barkshire, they recommend that the material be rotovated and loosened to a depth of 4-6 inches.

"Our system will grade sandy soil as well as clay. However, it will not work in turf areas," Joling says.

Barkshire notes that many clients with clay soils get satisfactory results by incorporating amendments or by bringing in finish materials to achieve tighter finishes.

If amendments are to be added, it is best to incorporate them during rototilling. Added materials should be spread across the area to be lasered and water must be available during and after the process to ensure the compaction process.

"Both turf areas and infields benefit from a laser-leveled finish, but due to the obvious increased play in the infield, that area is critical," he adds.

LaserLeveling's Skidmaster HC skid-steer grading system. designed for use on the hardest of materials.

Quashing a rumor

One persistent rumor is that cell phones or other radios will interfere with the leveling process.

"Cell phones do not interfere with our operations," Barkshire says. However, he says that other lasers working in a construction area can interfere, as can glare and reflecting light.

Joling agrees. "Lasers are light based," he says, "so they do require line of sight between the transmitter and 360-degree receiver."

Given those parameters, the system is ready to do its level best. ST

Chris Harrison is a veteran free lance turf writer.

STM uses one machine at UMBC

BY **TARA DEERING**

With more than 15 acres of athletic fields to maintain, you'd think Eric Plitt, sports turf manager for the University of Maryland, Baltimore County (UMBC), would have a fleet of equipment to perform his score of daily tasks. But believe it or not, Plitt has turned his operation into a one-machine show.

Plitt and his staff of three are responsible for all of the athletic grounds maintenance throughout the year. When Plitt first arrived at the university, the only equipment his department had was a few mowers and a utility vehicle. He says whenever they needed a loader to unload sports materials or perform other grounds maintenance tasks, he would have to borrow equipment from the campus grounds department.

Then about a year ago, Plitt was allocated money to purchase new equipment. At first, he says he considered purchasing several different pieces of equipment to dedicate to specific tasks as diverse as spraying and snowplowing. "We were also looking at some type of angle broom, which came as one unit, and that would have been another piece of equipment. It was adding up to be a lot of stuff," he says.

Then Plitt read about the Toolcat 5600 utility work machine, which has the features of a utility loader, pickup truck, and attachment carrier. "After looking at this, it knocked off like five pieces of equipment, and it actually was going to cost less to get it," he says.

But the athletic director had to see for himself that the utility work machine could do the work of several pieces of equipment before signing off on the purchase. "I talked it up because he was a little leery at first. Then I had the dealer bring one down, and I just drove around doing odd things that we could have never done before," Plitt says. "He was sold."

Plitt says that recently the machine helped clear overgrowth on a large hill at the university's soccer stadium. He attached the mower to the 46-hp 5600 and drove it straight up the hill. He says he was impressed by how the turf tires on the machine provided added traction while exerting low ground pressure, enabling him to easily climb the hill while causing minimal ground disturbance. "It would have taken three guys probably six hours to cut weeds on that hill, and we knocked that whole thing out in about an hour and a half," he says.

Like many universities with sports facilities, the UMBC athletic grounds department often receives deliveries of palletized lawn materials. This is where the pallet forks come in handy, Plitt says. With the pallet forks and the machine's 1,500-pound rated operating capacity, he says he can easily unload and haul topsoil and other materials where they need to go.

"That definitely saves us a lot of time," Plitt says. "Before we would have loaded the pickup truck by hand from our warehouse, and then drove it all the way back down to where it had to go and unloaded it by hand."

Using the pickup truck to unload and haul materials also didn't allow them access to confined areas in and around the athletic facilities. Plitt says the 60.5-inch wide machine fits through the softball and baseball fields' fence gates.

Plitt also uses the machine to remove snow, with both the angle broom attachment and the blade.

Plitt doesn't view the enclosed cab as a luxury but rather a necessity for staying efficient year-round. For example, he says, the heat not only helps keep the windows defrosted in the winter, but it also enables operators to work longer by keeping them warm.

"I would say we're at least 40 percent more efficient than we were before," he says. ST

Tara Deering is a technical writer for Two Rivers Marketing, Des Moines, IA.

BOBCAT GRADER ATTACHMENT

The Bobcat grader attachment, for its Bobcat 873 skid-steer loader, uses with a laser system, features a 7-ft.-wide moldboard that adjusts hydraulically six ways. The moldboard angles hydraulically 25 degrees right or left and can be moved manually up to 12 in. to the right or left.

The attachment requires no hard wiring for use with a laser guidance system. In this application, the laser system controls all blade movement for very precise grading.

The grader attachment can also be used manually for rough grading. The operator controls the blades using switches mounted on the loader's steering levers.

Bobcat Company/866-823-7898
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SISIS says its new Aer-Aid aerating system improves turf cover with less need to re-sod, alleviates many problems associated with shady conditions, and provides controlled reduction of field hardness. The machine blasts clean air directly into the rootzone, which speeds up the aeration process. No disruption in play is necessary, says the company. By adjusting the depth setting to your preference, you can better control the hardness of your fields.

SISIS/864-843-5972
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NEW LASER LEVEL AVAILABLE

The CL185 Laser is fully self-leveling and designed for any flat or cone application up to -1.85%. Primarily used for sports fields with a radial fall, this laser level has a range of 1000 ft. diameter. You are able to custom tailor the cone to your specific application by simply adjusting the slope to your specs you will have a perfect laser reference, says the company.

LASERFORCE, LLC/800-972-5273
For information, circle 071 or
see http://www.oners.ims.ca/5067-071

Isotopes Park in Albuquerque wins Field of the Year

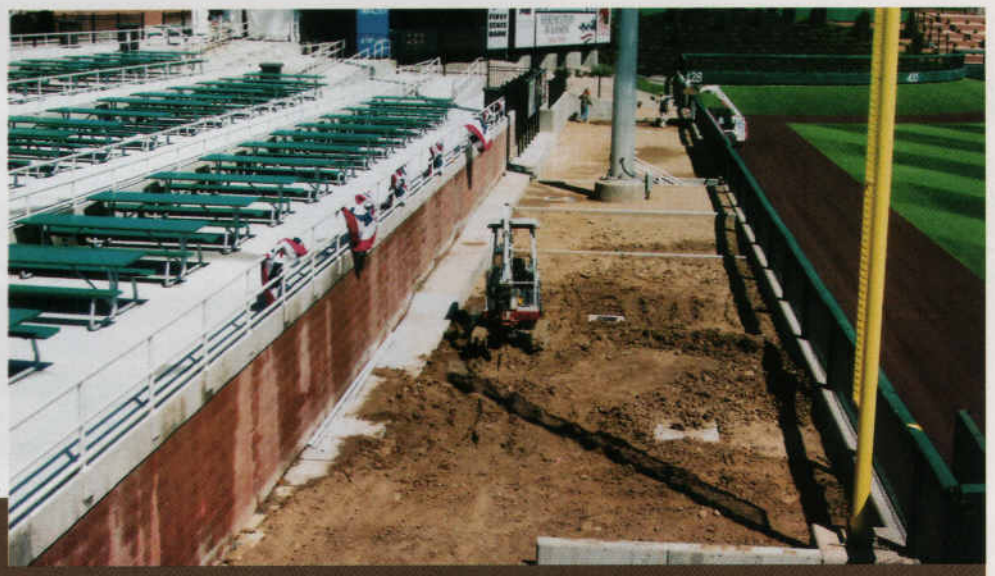
The Sports Turf Managers Association's 2004 College Baseball Field of the Year belongs to Isotopes Park in Albuquerque, NM, home of both the University of New Mexico Lobos and the Pacific Coast League's AAA Albuquerque Isotopes. Jarad Alley is head groundskeeper and is assisted full-time by Bryan Waller. ("Isotope" means any of two or more forms of an element having the same or very closely related chemical properties. We didn't know either.)

Isotopes Park is the renovation product of Dukes Stadium, completed in 2003 with a 14,000 capacity including a Creamland Berm grass seating area in right field. Mountain West Golfscapes of Peralta, NM, built the playing surface. The Kentucky bluegrass turf is at an elevation of 5,102 feet and the grass grows in a 92-8 sand/peat mix rootzone (blended by Dakota Peat).

Irrigation features include a Hunter system with ICC control clock with radio transmission, master valve, Hunter ICV valves, and I-20 and I-40 irrigation heads. Sixteen quick couplers provide for hand watering and hydrojecting.

Though home to two teams, schedules work out so only a few days a year sees both teams using the field. Isotopes Park also hosts the New Mexico Athletic Association state tournament (nine games over 3 days). Great cooperation between the university, pro franchise, and the state allow Alley and Waller a chance to keep the playing surface safe and presentable to everyone.

College baseball's early start means maintenance challenges. The bluegrass is



Maintenance Program

Winter: Maintain turf at 1 1/2 inches high, mow as needed

Spring: Maintain turf at 1 1/2 inches high, mow game days or 2-3 times a week

Summer: Maintain turf at 1 inch and OF at 1 1/4 inch, mow game days or 3 times a week

Fall: Maintain turf at 1 inch, mow game days or 3 times a week

(110 baseball games played in 2004)

January 2004
Administrative and shop work
6-2-0 Milorganite (.25 lbs. N/1000)

February
Start bullpen relocation
Put out turf covers
6-2-0 Milorganite (.25 lbs. N/1000)

March
21-0-0 ammonium sulfate (1 lbs. N/1000)
4-0-10 perk (.25 lbs. N/1000)
Bullpen relocation project

April
Built mounds for bullpen projects
Aerate and sweep cores
Topdress 30 tons of sand
20-10-20 (.75 lbs. N/1000)
4-1-10 perk (.25 lbs. N/1000)
Crumb rubber high traffic areas
Replace sod where needed

May
18-4-10 (.6 lbs. N/1000)
4-0-10 perk (.25 lbs. N/1000)
20-0-25 (.4 lbs. N/1000)
Replace sod where needed

June
Hosted NM East-West All-Star Game
18-4-10 (.5 lbs. N/1000)
Gypsum and K-Mag @ 5 lbs. each per 1000)

July
Hydroject full field in two directions
Aerate and sweep cores
Topdress 30 tons of sand
20-0-25 (.5 lbs. N/1000)
18-4-10 (.5 lbs. N/1000)

August
Fungicide X for tarp areas
20-4-10 (.75 lbs. N/1000)
0-0-28 micronutrient pak (5 lbs. per 1000)

September
Overseed infield and aprons
Aerate and sweep cores
Topdress 60 tons of sand
21-3-18 (.5 lbs. N/1000)
Gypsum and K-Mag@ 5 lbs. each per 1000

October
18-4-10 (.25 lbs. N/1000)
21-3-18 (.25 lbs. N/1000)
Changed infield cut-outs
Added sod to old bullpen areas
Added infield skin sprinkler zone
Re-level by laser the skin, baselines and plate

November/December
Equipment maintenance
Shop and too maintenance
Office work for year-end
UMAXX slow release (2 lbs. N/1000)

mostly dormant in February and early March, which can cause playability problems. Daily mound and skin work also is adjusted in these conditions. Alley uses turf blankets (Covermaster) on the infield and aprons over the winter and early season to help against the abuse. "We make sure to keep divots filled with sand and seed mix during these early months to promote new growth throughout the season," he says.

He also tries to overseed and hand aerate the high traffic areas consistently during the season to combat the wear and compaction. Just keeping his crew fresh is tough when you have two teams playing on one field. "We use our game day staff as much as possible to keep the field in great shape immediately following events to minimize the maintenance needed when both teams are on the road," says Alley.

Relocating bullpens

Last year the Isotopes relocated the bullpens from on the field to an area between the left field wall and a picnic pavilion, which made play much safer and cleaned up fans' sight lines. Alley was able to add a row of I-20 sprinklers to the bottom of the berm in centerfield because one row at the top wasn't providing sufficient water to the entire hill.

This year they completed the bullpen project by adding turf to the old bullpen areas along the warning track and changing the shape of the cut-outs around the bases. The latter move will help the crew keep the cut-outs in much better shape, Alley says. A zone of I-25 high-speed rotors to water the skin was added, which will save time and water during the season.

Normal day

Game time is 7:11 PM. 10 AM to 12 PM: Mow field and water skin
1-3:30 PM: Set up batting practice, water skin, prep bullpen mounds
3:30: Pitcher's stretch
4:15 Batting practice for both teams
6:00 Take down batting practice and pre-game field prep
Field prep is:
1. Rake entire skin, baselines, plate and mount
2. String baselines and batters boxes for chalking
3. Water plate, baselines, and skin
4. Chalk baselines and batters boxes
5. Paint plate and rubber on mound
6. Pull the lines that were strung for baselines and roll up hose
7. Walk around and doublecheck that everything is in the right place
8. Make sure all the water is turned off

In-game activities include raking player position spots using four rakes after the 3rd and 7th innings, and an infield drag after the 5th inning (five drags and two rakes). **ST**

Slugger Field, Nielsen win 2nd Field of Year title

It is not easy to grow bluegrass in the transition zone but Tom Nielsen, turf manager at Louisville's Slugger Field, seems to have it down. The Sports Turf Managers Association awarded its 2004 Professional Baseball Field of the Year Award to Nielsen, his second award in the past 3 years.

"I've been told ours is one of the few 100% bluegrass fields this far south," Nielsen says. "Since disease pressure is my most difficult challenge, so water management is the most important aspect of my managing the field."

Slugger Field's irrigation system consists of 34 Hunter I-20s, 46 I-40s, and nine I-44 heads totaling 89 heads in 13 zones, including the infield clay area. It can be controlled by a control panel or by remote control. Nielsen manually adjusts irrigation run times based on the daily use of a hand-held soil moisture sensor. In between cycles, he waters by hand. There are eight quick couplers positioned around the field so that the entire field can be watered with a 130-foot hose.

In 2004, between March 30 and October 7, Slugger Field hosted more than 115 events, including 72 Bats games, a wedding, a Kentucky Derby Festival event, and kids camp-out nights.

Nielsen says he used to have a problem caused by having to pull the tarp 40-50 times a year. "The majority of the time, the tarp is left on the field for long periods, which of course leads to a greater potential for disease. To solve this, we placed two 22-inch Air Max fans under two sides of the tarp. The fans can move air 150 feet, and this air creates a bubble underneath the tarp so that the water rolls off easily and enables a crew of four to pull the tarp off. Also, the air movement under the tarp lessens the chance of disease in our hot, humid climate," he says. "Without the air bubble underneath the tarp, it would normally take 12-14 people to dump the tarp." ST

The STMA Field of the Year Awards Program has been made possible through the generous support of its sponsors. They include Bayer; Carolina Green; Covermaster; Hunter Industries; Jacobsen, A Textron Co.; Nu-Gro; Turface Athletics/Profile Products; Turf Seed; West Coast Turf; and World Class Athletic Surfaces.