anything. YouTube use is diverse and includes videos ranging from product promotion videos and student recruitment videos. An example of our Golf and Sports Turf Management degree program recruiting video can be seen here: (http://www.youtube.com/watch?v=2REnxRiJ6qk).

Google docs. "Create and share your work online." Google docs is a free tool that offers a number of great features. In a nutshell, Google docs is a cloud-based software suite that you can use to format and edit documents, spreadsheets, presentations, and forms from any computer that has access to the internet. It also allows you to share your content with other users giving you the ability to work on a document simultaneously with another user located in another physical location. A relatively new tool that Google has added to Docs is the form feature. Maybe you would like to create a short feedback form for customers to leave comments. You can create a form, complete with many different formatting options that you can then post on a company website or distribute through email. All responses are compiled in a spreadsheet in Google Docs where you can review and summarize the information at your convenience. To access Google docs you need to have a Google account, which is, of course, free. Just go to www.docs.google.com to sign-up. Once you have signed up you will have access to Google docs and an added bonus of over 7 gigabytes of online storage that can be used to store any and all files that you would like to backup or store for easy access.

Should I or shouldn't I?

The question often asked by turf managers is "Should I participate in a social network?" Our answer is sure, why not? Social networks are a great place to reconnect with friends of the past or to connect with current colleagues. Within the social networks, you control who your friends are—if you don't want to be their friend, you simply do not accept their request. Every year the New Oxford American Dictionary announces the new word of the year. The new word of 2009 was "unfriend," a verb which means "to remove someone as a 'friend' on a social networking site such as Facebook. So, if your "friend" does something you don't like, you can simply "unfriend" them and they cannot see your status updates.

The next logical question asked is, "Which social network?" In the Green Industry, it appears that Facebook is the most commonly used; however, the Facebook status updates may actually be originating from a Twitter account. Settings within the Twitter and Facebook accounts allow "tweets" to update Facebook automatically. One reason Facebook may be the most popular in the Green Industry is because Facebook allows

for the creation of "fan" clubs and "groups." Many university turf programs have created Facebook groups for their current students and alumni to connect with each other

Additionally, many Green Industry businesses and allied associations have created Facebook profiles and the profile manager provides regular updates. From a marketing standpoint, Facebook, Twitter, and Buzz offer a relatively affordable means of reaching a targeted audience. For example, UF's Environmental Horticulture program has recently started targeting students in community colleges in Florida through Facebook ads. As a marketer you are able to specify age groups, keywords, location, interests, etc. to target your ads to those individuals who you feel will be most interested in your product. You can choose how much you want to spend with the minimum being around $1 per day. That might not seem like much, but for that $1 one is able to receive approximately 10,000 impressions (ad placements) each day on the pages of people who fit the criteria that we feel might be interested in attending UF upon finishing their community college education. Not bad when you consider how much it would cost in travel to reach just a fraction of the same group.

Though social networks offer some great benefits, users should exercise caution when using the networks. For starters:

• Social networks are really "private." People ranging from computer hackers to police investigators search social networks. Consequently, do not post too much personal information. For starters, leave the birthday and address lines vacant.

• Keep "business-related" sites business and "personal sites" personal. Espousing personal opinions or ideas on business-related social networks could come back to haunt you in the event that your opinion or ideas differ with those of your employer or customer.

• Do not post too many details related to your whereabouts. For example, if your job requires significant travel and you spend a great deal of time away from you home and family – don't advertise it. Doing so leaves your unattended family and home vulnerable to potential robbers. If you do post pictures from the trip, don't provide the details such as how long you will be away.

• Avoid posting "lack-of-judgment" statements, thoughts, or pictures. Most social networking sites "cache" their content meaning that there are backups and it is never deleted even if you think it has been. Phones with cameras can be dangerous tools if proper judgment is not exercised!

Whether you become a social network "junkie" who feels the need to update your status every three minutes or the occasional user who posts updates only when life's big events happen, social networks offer enjoyment and a level of interaction unlike that offered by another other communication tool. Start slowly and proceed cautiously. Enjoy. ■

Dr. J. Bryan Unruh is an associate professor and extension turfgrass specialist, and Dr. Jason Kruse is an assistant professor at the University of Florida.

JOHN MASCARO'S PHOTO QUIZ

Answers from page 17

THE HOLES ON THIS SOCCER FIELD SIDELINE are not moorings for new bleachers; they were caused by ground squirrels. At this resort hotel in Alberta, Canada, ground squirrels have taken up residency on the sidelines of this soccer field. The squirrels dig these tunnels into the ground and hibernate over the winter. In the springtime when I took this photo, the squirrels had emerged and the soccer field was also being grown back in for summer play. The ground squirrels are not a protected species in this part of the country unless they are on National Park Land. However they are food for many species of weasels, badgers, foxes, hawks and prairie falcons. They also are a nice addition to the landscape for the many tourists that visit this area to see when visiting this resort. They are allowed to reside here on the sidelines as long as they don't burrow into the playing area of this field.

Photo from John Mascaro's collection.

If you would like to submit a photograph for John Mascaro's Photo Quiz please send it to John Mascaro, 1471 Capital Circle NW, Ste # 13, Tallahassee, FL 32303 call (850) 580-4026 or email to john@turf-tec.com. If your photograph is selected, you will receive full credit. All photos submitted will become property of *SportsTurf* magazine and the Sports Turf Managers Association.

Rain gardens for sports fields?

Storm water pollutants are a major concern in all of our watersheds throughout the United States. It's a national problem that affects everyone from our local watermen to the food we eat. This isn't something dramatic like the BP oil spill, but a daily concern if we don't take the ecological responsibility to act on behalf of our children, to educate them and ourselves on this problem.

PHOTO 1

I'm not a radical activist you'll see protesting with a picket sign on TV; however, I am a person responsible for my own actions and for the way I conduct myself toward the environment. I'll get to my main point: do you know where the storm water ends up after it leaves your sports fields and goes down your drains? Do you ever stop and take a minute to think about the storm water that comes off your buildings, parking lots and roadways during a rain storm? Where does it go? What harm is it causing? How much water can it possibly be? The fact is that all these questions are loaded ones, but to keep this article short and to the point these are the Best Management Practices (BMP) we practice

Consider this: the amount of rainwater collected from one inch of rain on a 1,000 square-foot horizontal roof is roughly 600 gallons. What if you could capture most of it and filter it before it drained?

PHOTO 2

PHOTO 3

here at St Mary's College of Maryland.

Storm water that is not captured by rain gardens or buffer management systems can carry pollutants from vehicles in parking lots, sewage backups, soil erosion, fertilizers, paints, and pesticides to your local watershed. Consider this: the amount of rainwater collected from one inch of rain on a 1,000 square-foot horizontal roof is roughly 600 gallons. What if you could capture most of it and filter it before it drained?

I'm not saying we shouldn't use fertilizers, paints, or pesticides on our sports fields, because I use them to, so please let me explain. We are all environmental stewards whether we think so or not. We don't just take care of sports fields; we also take care of our environment by stopping soil erosion and maintaining a dust collection system and maintaining a water filtration system from our natural turfgrass fields.

When we apply, paint, pesticides or fertilizers to our sports fields, metals, nitrogen and phosphorus can run off from sheet and soil water movement to our local watershed. It might be a small amount of pollutant, but if each small instance were added up across the nation, the amount would be much greater. This is where best practices become important, to enable us to make a positive difference on a large scale. For example we use EPA approved sports turf paints and organic fertilizers to help eliminate our runoff or volatilizations.

We install rain gardens at St Mary's College as part of our landscape plans with every project we do on our campus (photo 1). We just built one for our intramural (Riviera bermudagrass) turfgrass athletic field (photos 2 & 3). Building rain gardens is easy and affordable. Your local extension office can help you with the building plans or visit http://www.co.worcester.md.us/ for downloadable plans of rain gardens.

Another thing you can do is capture your storm water and reuse it as long as it complies with your local and state regulations. At St. Mary's College, we take the nutrients out of the storm water holding pond (photos 4 & 5) by irrigating our


PHOTO 6


PHOTO 7


PHOTO 8


PHOTO 9

The bermuda turf absorbs the storm water pollutants and filters it for our groundwater table. We test the water for levels of ammonia, nitrites, nitrates and phosphorus at the beginning and end of each irrigation session

bermuda turfgrass. The bermuda turf absorbs the storm water pollutants and filters it for our groundwater table. We test the water for levels of ammonia, nitrites, nitrates and phosphorus at the beginning and end of each irrigation session (photos 6 & 7). The results show a slight decrease of pollutants after three irrigation sessions. Approximately 12,000 gallons were used per irrigation session over 53,440 square feet of grass. One thing to note, however, is that phosphorus reduction from the storm water pond was only effective when there was no rainfall. But using storm water for irrigation saves 100% of your local fresh water supply.

We also put our buffing areas to work for us and the environment. We mow the athletic turfgrass to .75 inches and cut the outside perimeter cool season turf at 2.5 (photos 8 & 9). We then install a naturalized area/meadow around the storm water pond to capture any run-off that might occur.


PHOTO 10


PHOTO 11

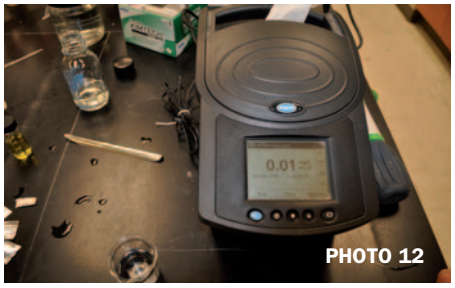


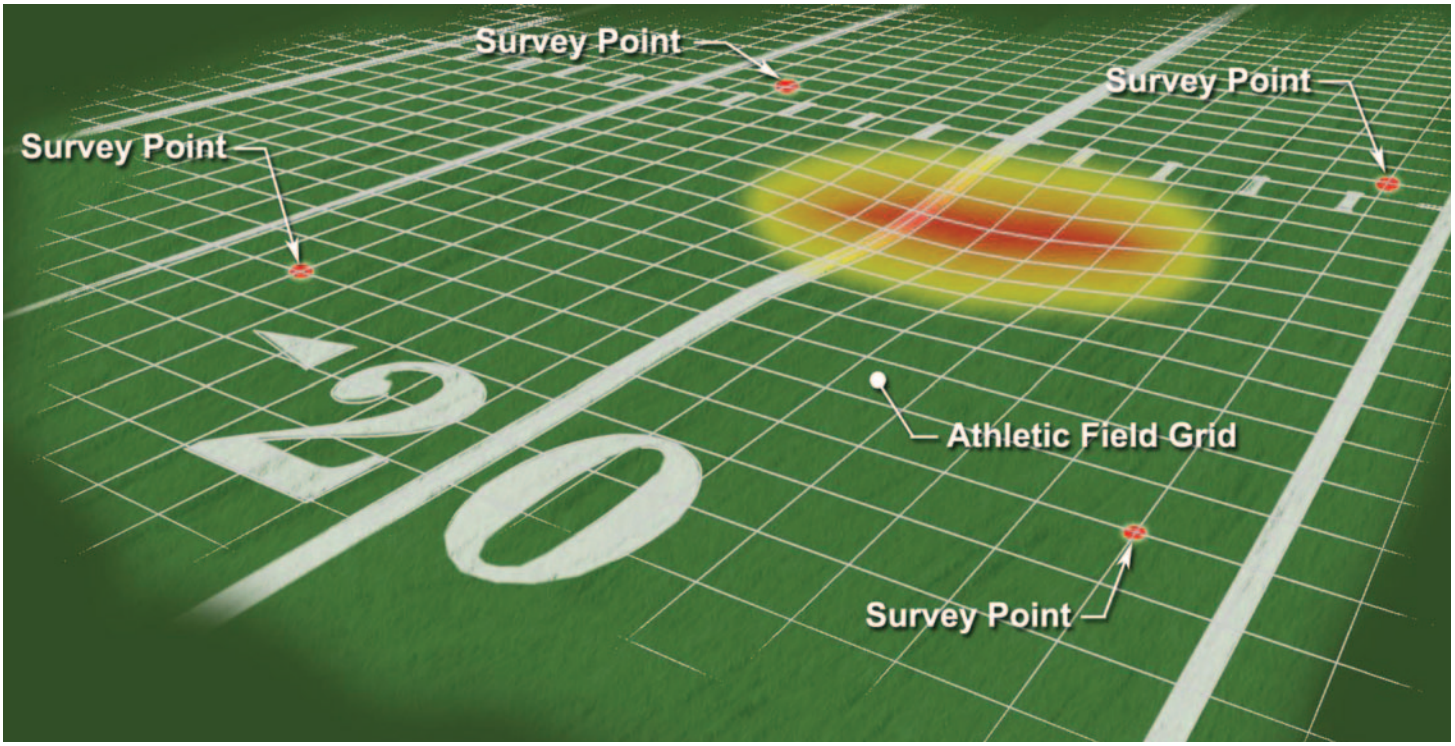
PHOTO 12


PHOTO 13

We place wells for sheet water movement and soil water movement to see how effective our buffer management is (photos 10 & 11). We test for ammonia, nitrites, nitrates, and phosphorus. We apply 46-0-0 before each rain storm. The soil water movement shows little to no movement at all. The sheet water movement wells show high ammonia content in the short grass; medium to low in the perimeter of the higher grass; and zero in the buffer zone with native trees, shrubs, grasses and wildflowers. A HACH testing machine was used for this case study for better accuracy in pollutant readings (photos 12 & 13). However you can use an aquarium test kit from your local pet shop and get similar results.

To get started, take a look at your facility and see the way the water travels in all locations. Where does the water drain from your equipment wash pads, athletic fields, parking lots and buildings? Can you recapture it or at least buffer it? Like anything else, education and experience are key. So if you're reading this, then you care. ■

Kevin Mercer is the superintendent of grounds at St. Mary's College of Maryland.



3D scanning and high definition surveying

for synthetic turf athletic fields, running tracks, and sport courts

>> ATHLETIC FIELD, running track, and sport court surface plane imperfections may remain using traditional point survey methodology due to the spacing of the survey grid. Laser scanning builds an actual topographic model of the surface plane using thousands of tightly spaced points, eliminating "blind spots" common with a traditional point survey grid. These scanner points can be used to create a graphic image of the surface plane without interpolation between the points, providing a composite and complete model of the athletic field or facility surface.

PROPER CONSTRUCTION of aggregate base courses for synthetic turf sports fields and base pavement courses for running tracks and sport courts is critical in the overall success and quality of the finished sports surfacing. Defects in the underlying construction will be reflected in the finished surface, resulting in athletic facility surfaces that have undulations, inconsistent surface plane, and varying cross-slope.

The finished surface product often represents the most significant portion of the project cost, requires strict planar qualities to meet athletic performance requirements and sport's governing body regulations, and is the finished aesthetic in which sports facilities are inevitably judged. To ensure high quality finished surfacing, determining acceptability of the base construction is a crucial step in the construction of synthetic turf athletic fields, running tracks, tennis courts, and sport courts.

Acceptable subgrade tolerance may vary slightly between various athletic facility consultants and owners for finished planarity requirements; however variations are generally very slight. A specification for a synthetic turf field finished aggregate base course typically will be similar to the following accepted industry standard:

Slope: Not less than 0.5% or as scheduled on the Drawings, consistent over the entire subgrade surface plane with a maxi-

◎ **Scanning technology** provides digital terrain modeling as opposed to point by point elevation data. The terrain model creates a detailed record of the actual surface as opposed to point by point information. With digital terrain modeling based upon thousands of closely spaced points, the data gaps with traditional grid as-built surveys are eliminated.

mum deviation from specified slope of 0.1% when measured between two (2) points perpendicular to the crown at an interval between the survey points of not less than of 50 feet.

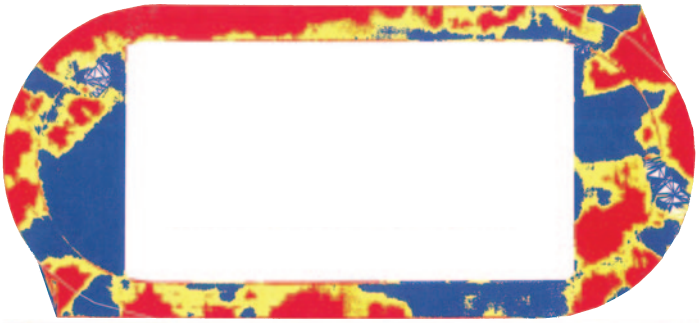
Planarity: The subgrade surface shall represent a true plane free of surface undulation or defect greater than ¼-inch when measured over 10-feet using a straight edge or sting line in any direction on the subgrade or as verified by field survey with a maximum grid interval of 10 feet. All elevations shall be expressed to the nearest hundredth of a foot (0.00).

As evident in the previous example specification requirements for synthetic turf base course construction, the field quality control measurements for acceptance of the synthetic turf field base construction are strict within a specified tolerance range and must be field measured to verify contractor compliance. However, the methodology for field verification as typically included is generally insufficient for proper and accurate confirmation in consideration of the specific and narrow range of the tolerance requirements. The above "visual" methods (straight edge or string line) rely on human judgment and visual interpretation and areas of non-compliance can be easily missed based upon the number of locations selected for visual observation and field survey of the base course.

Visual field observation using "string lines" or a "10-foot straight edge" will provide initial visual evidence related to base planarity acceptability and is commonly used. However, traditional "as-built" surveying will provide accurate elevation data that can be evaluated in consideration of field planarity requirements, slope, as well as relation to design grade and is widely considered superior to "visual observation" alone.

However, areas of undulation, depressions, or other planar deficiencies may still exist between the field survey shots comprising the grid, even at a 10-foot grid interval. Additional drawbacks exist with traditional "as-built" surveying or a combination of both surveying and visual observation, including time delay to schedule and complete the field work, download the survey data and prepare a scale drawing for review, and interpret the data for compliance, which also is subject to "engineering judgment." Further, traditional verification methods may not be cost effective in consideration of the limitations related to the actual accuracy of the evaluation whereby deficiencies may still exist in the completed base construction in spite of the cost associated with the evaluation.

ELA Sport has recognized the "technology lag" of traditional visual observation and surveying for base planarity as compared to the precise tolerances and minimal acceptable variance required for aggregate and paving base construction for athletic facility surfacing. In response to the accuracy limitations and inconsistent results of traditional verification methods, ELA Sport began experimenting with the use of the Leica ScanStation laser scanner to verify as-built aggregate subbase and pavement base for synthetic turf athletic fields and running tracks on several projects in June 2010.



Elevations Table			
Number	Minimum Elevation	Maximum Elevation	Color
1	-1.346	-0.021	
2	-0.021	0.021	
3	0.021	0.782	

>> DATA OUTPUT from the laser scanner may be formatted in a two-dimensional image to depict areas of non-conformance based upon requirements specified by the Owner or Consultant. The graphic model of the running track depicts variation in the track cross-slope from a true and constant plane of 1-percent. The laser scan output has been modeled to depict areas beyond the acceptable range of 0.9-percent to 1.1 percent with areas of shallow slope and areas of excessive slope color modeled for ease of identification.

As a significant advance over popular "total station" survey instrumentation, the ScanStation includes a laser scanner for as-built topographic surveys. The advanced capabilities provides up to a maximum 50,000 points per second instantaneous scan rate with elevation accuracy of 6 mm and distance accuracy of 4 mm for all scan points.

When applied to quality control verification of athletic facility base construction, the laser scan technology provides the following advantages over traditional verification methods:

• Scanning technology provides digital terrain modeling as opposed to point by point elevation data. The terrain model creates a detailed record of the actual surface as opposed to point by point information. With digital terrain modeling based upon thousands of closely spaced points, the data gaps with traditional grid as-built surveys are eliminated. Further, interpolation between grid points (where elevation data is averaged) is eliminated as virtually hundreds of elevation points comprise each grid area in comparison to the four corner points of the grid available through traditional survey methods.

• Data acquisition time is reduced by over 75% as compared to traditional field surveying. Due to the instantaneous scan rate available with the ScanStation, thousands of points can be scanned instantaneously as opposed to surveying each point on the field individually.

• When connected to a laptop computer in the field, almost instantaneous feed back can be provided to the Owner, athletic facility