ASBA recognizes new Certified Field Builders

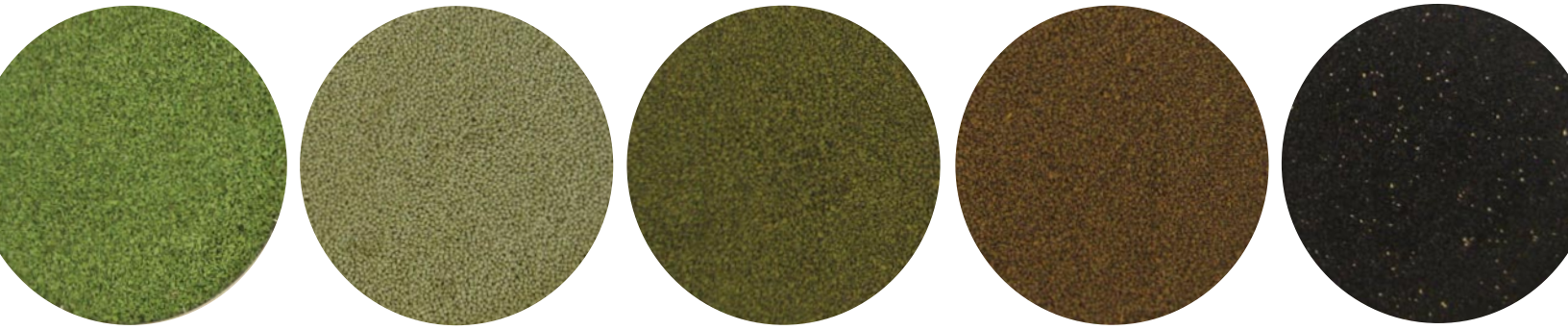
THE AMERICAN SPORTS BUILDERS ASSOCIATION (ASBA) has announced the names of the individuals most recently recognized as Certified Field Builders (CFB). ASBA's voluntary certification program allows builders of specific athletic facilities (currently tennis courts, running tracks and sports fields) to demonstrate proof of their experience, as well as their knowledge of sports facility-specific construction.

ASBA developed the program in order to help raise professional standards and improve the practice of sports facility construction. The CFB designation encompasses both natural grass and synthetic turf fields; however, an individual may choose to specialize and become either a CFB-N (the designation for those specializing in natural grass fields) or CFB-S (for those specializing in synthetic turf).

To become a certified builder, an individual must meet specific criteria set forth by ASBA; he or she must complete an application that shows proof of a set amount of experience in the chosen type of sports facility, and then pass a comprehensive exam on construction and maintenance. In order to maintain the designation, an individual must recertify every 3 years by documenting a sufficient level of continuing education activities in the relevant field or by passing the examination again. ■

The following individuals recently completed all requirements to become Certified Field Builders:

Derek Delmonico, CFB (R.A.D. Sports, Rockland, MA)
Mark Heinlein, CFB (The Motz Group, Cincinnati, OH)
Jason Hester, CFB (Sports Turf Company, Inc., Whitesburg, GA)
Jonathan Holland, CFB (Precision Turf, LLC, Buford, GA)
John McSweeney, CFB-S (AstroTurf, Trenton, MI)
Aaron McWhorter, CFB (Sports Turf Company, Inc., Whitesburg, GA)
John Plaia, CFB (Hellas Construction, Inc., Austin, TX)
Christopher Polk, CFB, CTB (Hellas Construction, Inc., Austin, TX)
Matt Schnitzler, CFB, CTB (Hellas Construction, Austin, TX)
Craig Shonk, CFB- S (AstroTurf, Grain Valley, MO)
Joseph Williamson, CFB (Sports Turf Company, Inc., Whitesburg, GA)



>> **Figure 1. INFILLS TESTED** included (left to right) Ecofill, TPE, green crumb rubber, tan crumb rubber, and black crumb rubber.

Is there any way to cool synthetic turf?

WHEN WALKING ACROSS A SYNTHETIC TURF FIELD on a sunny summer day, it does not take long to notice the heat emanating from the surface. While synthetic turf has undergone design changes that have improved overall field conditions, the issue of high surface temperature remains. Should I irrigate my field to cool it off? Do alternatives to black crumb rubber infill really lower surface temperature as they claim? At Penn State's Center for Sports Surface Research, our studies are beginning to answer these questions.

Before we get into the results of our testing, it is useful to have an understanding of when and why these surfaces get hot. Surface temperatures reach their peak during bright, clear sunny days with little humidity and haze. The temperature of a field on an 82° F clear, sunny day will be higher than on a hazy, humid day with an air temperature in the 90's.

How hot can synthetic turf really get? The highest recorded temperature was 200° F during a summer day on the campus of Brigham Young University in Provo, UT. While this may be an extreme case, it is not uncommon for temperatures to surpass 150° F. In fact, during Penn State's Turfgrass Field Days this past summer, we recorded temperatures as high as 175° F on our research plots. For a comparison, natural turf rarely reaches 100° F, even on the hottest, clearest days.

Irrigation is the most common method used to try to reduce the surface temperature of synthetic fields. Pumping water onto synthetic turf may garner some odd looks, but the application of water can rapidly cool the surface of the field. The problem is that cooling effect is short-lived. Our research shows temperatures quickly rebound 20 minutes after irrigation stops and the irrigated surface is only slightly cooler than a non-irrigated surface three hours after watering (less than 10 degree difference). Another issue with irrigation is the potential for increased humidity directly above the turf's surface. Rising temperatures coupled with high humidity may expose athletes to even more heat stress.

The reason we have not been successful in significantly reducing the temperature of these surfaces through irrigation is that these systems have been designed to rapidly drain water. They simply do not hold onto much water and thus the evaporative cooling is short-lived. We have attempted to increase water holding capacity of the systems and thus increase the duration of the cooling effect by adding water-holding particles to the crumb rubber infill.

In our testing, we mixed a substantial amount of calcined clay with crumb rubber (1 to 1 on a volume basis). While successful in prolonging the duration of cooling initially, the calcined clay particles were reduced to dust when subjected to simulated field use. Not surprisingly, the cooling effect was lost as the particles broke down. Additionally, such a high amount of calcined clay may affect the playability of the field and the dust could impact drainage, although this was not measured in our study.

Although it is common to blame the sunlight's interaction with the black crumb rubber for the hot surface, the fibers also significantly contribute to a field's temperature. Anyone who has spent time working with traditional (non-infilled) Astroturf-type surfaces can tell you that those fields also got extremely hot and they do not contain any crumb rubber. In fact, results from our research plots show that the surface temperature of traditional Astroturf is higher than infilled synthetic turf when no irrigation is applied.

Surface temperature reduction has been attempted through modifications to both the infill material and changes in the fiber. Marketers of crumb rubber infill alternatives claim their products reduce surface temperature. Some have proposed chang-

>> **Figure 2. EXPERIMENTAL SETUP** to evaluate surface temperature of synthetic turf.

ing the color of traditional crumb rubber particles as a cooling technique. Certain turf fibers are even claimed to contain technology that significantly reduces surface temperature. Unfortunately, independent research supporting the claims of these products has been lacking and unavailable to consumers.

At the Center for Sports Surface Research, we conducted a series of experiments to evaluate the effects of varying these components on surface temperature. Surface temperatures of infill materials and fibers were tested independently and as a system (infill installed into carpet). A variety of infill materials including various colors of crumb rubber, Ecofill (polyolefin granules), and TPE were evaluated (Fig 1). For the fibers, we recorded the temperature of white, gold, silver, black, and green (FieldTurf Duraspine, FieldTurf Revolution, and AstroTurf AstroFlect) fibers. The combined turf system test included a total of 11 fiber-infill combinations. We conducted our tests indoors using a 250-watt infrared heat lamp (Fig 2) that has been correlated to sunny outdoor conditions at Penn State.

Our study indicates that none of the fiber-infill combinations tested measured substantially lower in surface temperate than the standard green fibers and black crumb rubber infill systems (Table 1). We did find certain combinations of infill type and fiber can lower the surface temperature slightly. In the fiber test, it's not surprising

Table 1.
Surface temperatures of various fiber-infill combinations after 3 hours under heat lamp.

Fiber Color	Infill	Surface Temperature (F)
Gold	Black Rubber	171.1 a†
White	Black Rubber	170.4 ab
Silver	Black Rubber	169.2 ab
Black	Black Rubber	169.2 ab
Green	Ecofill	167.3 abc
Green (FieldTurf Revolution)	Black Rubber	165.6 abcd
Green	Black Rubber	165.5 abcd
Green	Green Rubber	163.8 bcde
Green	Tan Rubber	161.1 cde
Green	TPE	160.5 de
Green (AstroFlect)	Black Rubber	158.9 e

All fibers were FieldTurf Duraspine Pro unless otherwise noted
†Temperatures that do not share the same letter are significantly (statistically) different

Table 2.
Surface temperatures of various fibers after 1 hour under heat lamp

Fiber Color	Surface Temperature (F)
Silver	149.4 a†
Black	144.3 b
Green (FieldTurf Duraspine Pro)	140.5 bc
Gold	139.8 bc
Green (FieldTurf Revolution)	138.6 c
Green (Astroflect)	137.9 c
White	128.7 d

All fibers were FieldTurf Duraspine Pro unless otherwise noted
†Temperatures that do not share the same letter are significantly (statistically) different

that the darkest colors produced the hottest surfaces (Table 2). White fibers were the coolest, resulting in a surface temperature approximately 10 degrees cooler than green fibers. When comparing the three green fibers, both FieldTurf fibers (Duraspine Pro and Revolution) and AstroTurf's AstroFlect did not statistically differ from one another.

In the infill material comparison, the color of crumb rubber proved to have little or no effect on surface temperature (Table 3). Green rubber was marginally cooler (less than 10 degrees) than both black and tan rubber, but was still nearly 150° F. Both Ecofill (141.6° F) and TPE (136.4°) were cooler than all crumb rubber colors (black: 156.0° F, tan: 153.4° F, green: 147.9° F).

Table 3.
Surface temperatures of various infill after 1 hour under heat lamp

Infill	Surface Temperature (F)
Black Rubber	156.0 a†
Tan Rubber	153.4 a
Green Rubber	147.9 b
Ecofill	141.6 c
TPE	136.4 d

†Temperatures that do not share the same letter are significantly (statistically) different

While it is valuable to examine the influence of synthetic turf components on surface temperature individually, what really matters is the effects of these components after they are combined in turf systems. In our study, any effect of fiber color was essentially negated with the addition of black crumb rubber infill (Table 1). It did not matter whether the fibers were white or black—surface temperature was essentially the same for any fiber color tested. AstroTurf's AstroFlect was not statistically different from FieldTurf Duraspine Pro fibers (green) that contained either TPE, green rubber, or tan rubber, even though it trended about four degrees cooler.

Reductions of five or even ten degrees offer little comfort when temperatures can still exceed 150° F.

NO MAGIC BULLET

What do these results tell us? As of right now, it is obvious that there is no "magic bullet" available to dramatically lower the surface temperature of synthetic turf. Reductions of five or even ten degrees offer little comfort when temperatures can still exceed 150° F. Until temperatures can be reduced by at least 20-30 degrees for an extended period of time, surface temperature will remain a major issue on synthetic turf fields.

We will continue to investigate methods to cool these systems. You can follow our work on our website (http://ssrc.psu.edu), "Liking" us on Facebook (Penn State's Center for Sports Surface Research), following us on twitter (@PSUsportsturf) and on www.stma.org. We have also introduced a free video series on our website called the "Sportsturf Scoop." Topics related to both natural grass and synthetic turf (including a video on surface temperature of synthetic turf) are available and new topics are added regularly. ■

Tom Serensits is manager of Penn State's Sports Surface Research Center.

Illinois parks manager saving money & water with zoysiagrass

>> **CURT STRETCH,** parks manager in Mattoon, IL says his zoysiagrass loves the heat and sunshine.

CURT STRETCH, parks manager for the Mattoon (IL) Parks District, reports he is mowing less and saving money on water and fertilizer since sodding some of his baseball and softball fields with zoysiagrass.

"There is less maintenance involved with the zoysia; less water and fertilizer, and less mowing," Stretch says. "And it holds up in the heat of this region; in fact, it thrives on heat and sunshine. In mid-June and July when bluegrass and fescue are taking a beating, the zoysia takes off.

"This year, with all the rain and cool weather we've had it's a bit behind but Eastern Illinois University and the University of Illinois played on it in mid-April when it was still dormant and they loved its shortness and softness, despite it being only halfway green," Stretch says. "It wasn't totally green until May 1. Those two teams have played here the past few years and say it makes for a true and fast infield."

Stretch and his father both have the grass at their homes and he says his friend, Ron Maxwell, owns a golf course in the area that uses zoysiagrass so he knew what he was getting when he decided to use Zenith sod on some of the district's baseball and softball fields. "I have one field where half the outfield is bluegrass and half is zoysiagrass," he says, "and we mow the bluegrass every 3 days while I've mowed the zoysia only twice since April [we spoke May 14]. And I knew it would hold up to the heat."

The district has 15 ball diamonds and Stretch reports his water bill has been cut substantially since he began using zoysiagrass. "Our water bill went from $6,000 to $800, which is considerable and I'm able to spend that money elsewhere. Water does help the zoysia but it doesn't need it with its 15-inch roots.

"And in August we only have to mow it every 10-12 days."

Stretch also reports he can keep the zoysia at ¾-inch height of cut and also needs only to spray a low dose of Roundup on the still-dormant zoysiagrass in the spring to kill any emerging weeds. "I also apply some ROOTS turf food twice a year and add in a little bit of nitrogen," he says.

He says he did use zoysiagrass seed on one Little League outfield and it took until the 3rd year before it really took off in growth. It is hard to grow it from seed because you have to patient while it establishes. "In the infields I've used it though it is the opposite of other grasses; I put seed down in June and July and those little seeds thrive in the heat."

Stretch says he has not had any thatch or disease problems with the grass but that he does use a power edger about once a week. "We go a bit deeper because it will grow out but using the power edger will keep it straight and there's no encroachment." ■

By Kevin Mercer

Using signage to educate the public about your environmental stewardship

I HAD A CONVERSATION with Dr. Dave Minner and my wife, Sally, over dinner at the STMA Awards Banquet in Austin last winter about how the general public perceives sports turf managers and how at times they seem to misconstrue the work we do. They seem to think we have a blatant disregard for protecting our natural resources, when the truth is, we preserve it every day.

I wonder why the general public is so misinformed about the work we do day in and day out. The truth of the matter is simple; when we are spraying pesticides or applying fertilizers we may appear as outlaws to our environment, but what do we do to showcase our environmentally friendly stewardship practices? The answer to the question is a loaded one by far; however, the truth of the matter boils down to this: it might be our own fault.

We all have signage to lead the general public to parking areas, restrooms, concessions stands, gift shops, etc., but how much thought is given to educating the general public about environmental stewardship practices you might already have in place on your property? We are all stewards of the land. Signage is one of the most important tools we can use to educate and teach the general public about our environmental stewardship.

Today, we have to listen to what the public is saying. For St. Mary's College of Maryland, it's the students that matter and how we conduct our day-to-day business, including our Sports Turfgrass Maintenance program. We use a Bermuda hybrid cultivar (Riviera) that can withstand the transition zone punishment and heavy-use field play. We call our sports fields "green spaces" and point out all the beneficial factors they possess.

A list below highlights signage opportunities for the environmentally friendly practices you might already have in place, from storm water management to recycling. Teaching the public is not only good for your image, but it also serves as a 7-day per week outdoor classroom for the environment.

PARKING LOT AREAS

Large common lawn areas around parking areas that are not being used or serve as any function for your facility can be converted to meadows or naturalized areas. Installing blue bird boxes and selective perennial plants can turn this into a wildlife sanctuary. Signage can have wording for wildlife, storm water management and reducing carbon footprints.

Non-pervious parking lot surfaces equipped with rain gardens are an excellent outreach and education tool for storm water runoff prevention. Signage can have wording for different types of native perennial plants that absorb storm water runoff. Based on the square footage of your parking area, you can average how many gallons of storm water runoff you're filtering from one inch of rainfall. You could document all wildlife that makes the area its home.

You do not need multiple signs; one sign can sum your entire environmental program in a bullet-point format.

If you have asphalt or concrete parking lots, plant several large canopy trees within the parking lot island for shade. Signage can have wording about providing shading for a cooling effect for hot impervious surfaces from the sun's radiation.

You do not need multiple signs; one sign can sum your entire environmental program in a bullet-point format.

PRACTICE FIELD AREAS:

• Unused lawn areas that serve no purpose around your practice facilities can be turned into a forestation.

• Install buffer strips off all four sides of the field for slowing down sheet water movement.

• Catalog all the native plants from your meadows and show them through signage throughout your practice facility.

• Document any nesting or residential wildlife and showcase through signage.

• Highlight and bring attention to any large trees that might be the largest on state record.

• Show through signage your organic fertilizer program.

• Show how many pounds or gallons of pesticides you have eliminated.

• Show through signage if you're using VOC-free marking paints.

• Show through signage if you're using disease- and pest-resistant turfgrass.

You do not need multiple signs; one sign can sum your entire environmental program in bullet point format.

STADIUM FIELD/PRACTICE AND INTRAMURAL FIELDS

Dr. Keith Karnok, Dr. Gil Landry, and Timothy R. Murphy from the University of Georgia, and Dr. Bert McCarty from Clemson University, wrote a piece on the environmental benefits of turfgrass for the Sports Turfgrass Management Course Certificate Program that I would to like elaborate on a little. I would highly recommend this course!

Air Purification. Healthy turfgrass and moderated field conditions can have between 40 million and 10 billion turfgrass shoots for a standard football, soccer or lacrosse field. The turfgrass shoots are very good at trapping dust, dirt and other pollu-

tants that can be potentially harmful for human health. Hundreds of pounds of sulfur dioxide can be absorbed throughout the year, helping to reduce levels of ozone, hydrogen fluoride and peroxylacetyl nitrate (PAN) to promote cleaner air. In fact, some species of turfgrass are known to absorb carbon monoxide. Turfgrass can aid in filtering huge amounts of air pollutants found in urban areas from homes, cars and factories.

Global Warming's Arch Enemy. Turfgrass requires and absorbs carbon dioxide and

Getting started

FOR MORE INFORMATION to become better environmental stewards contact Jim Sluiter, staff ecologist at Audubon International, jsluiter@auduboninternational.org. Remember, environmental stewardship is not a fad but rather our social responsibility. So many sports turfgrass managers have already shown support and shared ideas for new ways of rethinking grounds maintenance programs without re-inventing the wheel. We have to be a team to make a difference to clean our local watershed and reduce our carbon dioxide for greenhouse gasses. Everything we do to prevent storm water runoff and to reduce our carbon footprint adds-up. We are the leaders who care about tomorrow's sport turf managers. I remember how many golf course superintendents mentored me along the way on my turf management path. I still use some of the old-school concepts that I learned from those guys. In my humble opinion, I think this is a great way to give back and help the new generation of sports turf managers.-Kevin Mercer

acts as an oxygen converter. This combats and fights greenhouse gasses and hopefully suppresses global warming. Turfgrass and trees along interstate highways produce enough oxygen for millions of people.

Erosion Control. Turfgrass acts as a superior control mechanism for erosion. Turfgrass has a superior root structure system that is ideal for eliminating soil erosion. Preventing soil erosion helps to eliminate silt and phosphorus matter from leaching into our local watershed and stabilized shorelines. Turfgrass also reduces storm water runoff much better than other vegetation.

OTHER BENEFITS TO PROMOTE

Turfgrass helps to filter rain and storm water runoff for underground aquifers. The heavy root masses and soil microbes act as a filter to capture and break down different types of pollutants. Case studies from Cornell University have shown that properly fertilized healthy turfgrass is one of the best protections against the possibility of nitrogen leaching into your local watershed. There is another study that proves turfgrass acts as a superior filter for as storm water runoff. Remember, however, that certain turfgrass cultivars that are mowed once a year control and absorb much more storm water runoff then short-mowed turfgrass within ditch lines or culverts.

Turfgrass is one of nature best ground covers for reducing solar radiation from the sun. Each individual blade of turfgrass acts as an evaporative cooler. The cooling effect in turfgrass comes from evaporation and transpiration: one acre of turfgrass can lose about 2,400 gallon of water. This evaporative cooling dissipates approximately 50% of the accumulated heat.

Other benefits include: fire prevention, allergy control, glare reduction, pest control and noise abatement.

You do not need multiple signs; one sign can sum your entire environmental program in bullet point format.

WILDLIFE HABITATS

Meadows/naturalized areas can provide habitat for many different types of wildlife. Show through signage how you are protecting the local ecological system.

You might have rain gardens, butterfly gardens and healing gardens, which are a new concept for college grounds. These are excellent areas for signage of wildlife inventory.

Trees hold nests of many types of bird species. Have a survey done from a professional nesting bird consultant. Show through signage how you are protecting sustainable grounds solutions. Some property might have bird and bat housing throughout their property. Inform the public through signage how certain types of birds and bats can eat several types of pest insects, providing a means of natural pest reduction.

You do not need multiple signs; one sign can sum your entire environmental program in bullet point format.

RECYCLING

• Trash is the most common term that the general public associates with recycling. Set company goals per year for a certain amount of recyclables tonnage for your complex and show your numbers to the public through signage and press releases.

• Yard Waste: Inform the public if you compost and show through wording how many yards you generate and apply for your lawns at your complex per year to improve soil organics.

• Storm Water: Inform the public if you have rain barrels installed on your downspouts for your complex. Show through signage how your company eliminates the use of portable water for irrigation for herbaceous plant watering.

• Food Waste: Vermin composting is becoming very popular to eliminate food waste and turn into organic soil amendment. Show through signage how many tons of food waste per year you recycle back into soil organics for your beds and lawns.

Signage can be very expensive; however, it's worth every penny for outreach and educational purposes, to tell the public about your company's environmental stewardship. Keep all environmental signage uniform in shape and color so people can associate it from a distance and identify it as a symbol for positive environmental influence for your property. If a picture can be worth a thousand words, why not advertise it to speak to a million?

When preparing your green space/sports turfgrass field, take a look around your parking lots, fields and shop areas to see how you can improve your storm water management and reduce your carbon footprint. It's a packaged deal; we just can't do one or two things well. We should try to do as much as we can to the best of our abilities if time and cost allows.

My good friend Jim Sluiter has been there for me since the start of my environmental journey, always offering great advice and encouragement. His dedication to protect wildlife sanctuaries and balance the aesthetics of turfgrass is a difficult combination; however, once done, it can promote excellent recognition for your institution through a program that can work for you. ■

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

By Clayton Hubbs

>> **TD AMERITRADE PARK** will be the new home to the NCAA College World Series

New home for College World Series handles water problems

Clayton Hubbs is a former groundskeeper for the Arizona Diamondbacks and Director of Operations for Stabilizer Solutions, Inc

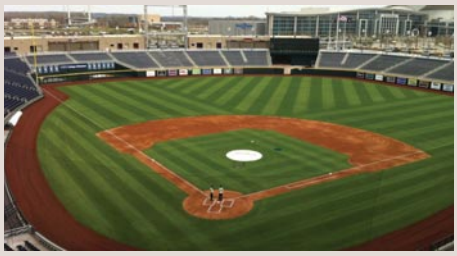
FOR THE FIRST TIME IN 60 YEARS, college baseball's "Road to Omaha" will end somewhere other than historic Rosenblatt Stadium. Just down the road, the state-of-the-art TD Ameritrade Park will be the new home to the NCAA College World Series (CWS). Much has been said about the great atmosphere and tradition that will be lost with the closing of Rosenblatt, but Omaha officials and the NCAA insist that the CWS is gaining much more with the construction of the new stadium.

The CWS was first played in Omaha in 1950 and is one of college baseball's longest running traditions. Named after beloved Omaha Mayor Johnny Rosenblatt, building Rosenblatt stadium and keeping the CWS in Omaha became a labor of love through the first 10 unprofitable years. Through the struggle, Rosenblatt Stadium grew to become a central piece of not only CWS history, but the Omaha community and economy as well.

Almost 60 years after Omaha struggled to keep the CWS, the city was placed in a familiar position with pressure from the NCAA to build a new stadium or potentially lose the CWS. In another labor of love, then-mayor Mike Fahey proposed building a new stadium in downtown Omaha. With such a tough act to follow, The Metropolitan Entertainment & Convention Authority (MECA), enlisted the help of designers HDR Architects, Populous and DLR, and together with general contractor Kiewit Construction, set out to produce a world-class, LEED (Leadership in Energy and Environmental Design) Certified stadium. Even with the $131 million investment, the new TD Ameritrade Park has very large shoes to fill. The new stadium is expected to not only create new Rosenblatt-esque memories for fans and players, but must also kickoff what *Baseball America* calls the "new era of college baseball" for the NCAA.

CATCH AND RELEASE

Perhaps the least talked about feature of the new stadium may be its most impressive. With such high expectations looming, the new playing surface goes above and beyond the traditional ball field, providing a high-tech solution for the stadium's regulatory concerns and contributing large cost savings to the project.



...the field and drainage system balance the need to perform at a highly scrutinized collegiate level with the site's unique restrictions.

Designed by Dan Almond of Millennium Sports Technologies, Inc., the field and drainage system balance the need to perform at a highly scrutinized collegiate level with the sites unique restrictions. Being situated along the Missouri River, flooding is a major concern. Because of this, restrictions are placed on the amount of water that can be released off the site, water that potentially could aid in raising the river level during a rain event. While in a planning meeting, Almond discovered that to meet the site's historic release rate requirement, the architects and engineers planned to use large storage tanks under the parking lot to hold hundreds of thousands of gallons of water. After learning of their plans, Almond suggested that he could design a drainage system that would allow them to store the required 7.5 inches of rain underneath the field, cutting tremendous tank and labor expenses, and bringing the field into the spotlight for the rest of the design team.

According to Almond, the drainage system construction began with the mainline piping, which runs like a spine from under homeplate and discharges the water into a large vault/water separator under center field. Additional perforated drain lines run from the mainline in a perpendicular pattern. Almond had the lines placed in stone-filled trenches, as he is sure the water will find its way to the trench as a backup, should something happen to the drain line.

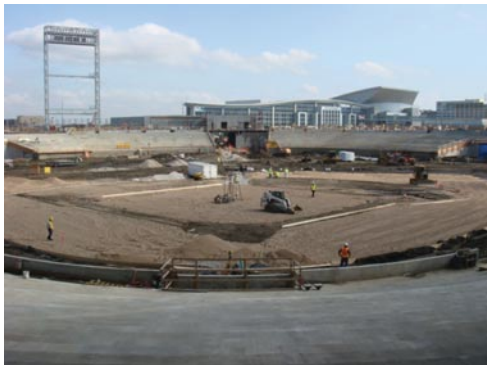
Next a layer of precisely selected ¼ to ⅜-inch gravel was placed following the slope of the drain lines. The gravel selection is critical to achieve the desired porosity that many of Almond's calculations hinge upon. This layer can be between 4 to 30 inches deep, increasing in depth closer to the main collector drain line discharge point.

Then a 10-inch sand rootzone was placed over the gravel layer. The sand is slightly coarser than a USGA specification and was blended with 8% peat. When asked if the gravel and sand interface was tested, Almond laughed and said, "You could say that. I don't leave anything to chance; we use independent testing laboratories and we test everything, and retest and retest." The tests (and retests) were conducted to achieve the right sand particle size needed to bridge correctly with the gravel, important in preventing migration of the sand into the gravel layer below.

Finally, the surface was sodded with a Kentucky bluegrass blend from Graff's Turf Farms of Fort Morgan, CO. Almond says with this design, beyond the underground water storage capabilities, the surface is able to move water through at an extremely high rate of 5-6 inches per hour.

TRUSTED TECHNOLOGY

As is his practice, Almond uses technology that he has prior experience with to deliver greater value to his clients. With almost 10,000 linear feet of piping in the ground, Almond wanted to capitalize on the large investment and use the drainage pipes for other purposes. A SubAir system was installed to help evacuate water more quickly through the rootzone and to promote better turf growth. The system's main function will be to provide oxygen to the root structure, but it is also fitted with natural gas injectors



that can be used to warm and extend the life of the field in the Fall, or speed up dormancy in the Spring.

Almond recounts another side benefit of the SubAir system. "I remember watching Bill Deacon, head groundskeeper for the New York Mets, use the SubAir system at Citi Field to literally lift the tarp off of the ground and move the water after a heavy rain. Those tarps can get really heavy when covered with water and this is a great way to help."

Almond noted, "This is a tough downtown location with poor (air) circulation, bad weather and lots of rain."

> The site was a former railroad yard with existing soil that was very compacted and contaminated with debris…

Because of the unique site requirements, careful attention was paid to the infield, warning track and mound clay material selection. For the infield mix, Almond collaborated with Stabilizer Solutions, Inc., a soil technology company, to help design and source a regional stabilized infield mix for TD Ameritrade Park. The resulting "Pro Red" mix is a selected blend of 40% silt and clay content, with a silt-to-clay ratio (SCR) near 1, and the remainder composed of sand particles derived from a crushed and screened aggregate.

The mix contains the Stabilizer organic amendment to maintain moisture levels longer, while keeping the playing surface stable during rain events. The company relied on a local dealer, Golf and Sport Solutions of La Salle, CO, to meet its strict specifications and blending procedures to produce this mix closer to Omaha.

The infield mix was designed with a 0.75% slope to aid in surface drainage. Almond chose to use a crushed volcanic rock for the warning track because of its appearance and crunchy feel, and to use the Stabilizer because it really knocks the dust down and holds moisture. The warning track was designed with a 1.25-1.5 percent slope in certain areas. The mound was designed to be portable, because of additional field use such as concerts, football and soccer games.

Almond admits that construction was not easy. The site was a former railroad yard with existing soil that was very compacted and contaminated with debris, making it difficult to trench and install the 10,000 linear feet of piping. Further complicating construction was the fact that this was an Omaha Superfund site, meaning that the existing soil was not permitted to leave the site. This forced playing field contractor Nemaha Landscape to get creative and store excavated soil under the parking lot and other areas.

Because of the tight 13-week field installation time table, Nemaha Landscape was required to work around the stadium construction team. The contractor worked in three phases to allow other trades to finish on certain areas of the field. Amazingly, field construction was finished 1 week ahead of the deadline, but as a result of the schedule, the sod was not installed until November 2010. This created a new challenge for Turf Manager Dan Blank to establish the sod in a short time frame. "This is still a new field, Dan was able to get the new turf well rooted by the use of growth blankets," said Almond. Despite the small setbacks, Almond believes this field will stand up to what is thrown at it. "This field should get quite a bit of use, Creighton University plays their home games there, and it will host football/soccer games and concerts. I think we were able to balance the need for field use and drainage concerns."

TD Ameritrade Park opened on April 19, 2011 to host Creighton University vs. the University of Nebraska, attracting 22,187 fans, the largest regular season attendance this year in NCAA baseball. While Rosenblatt will forever be a part of the CWS identity, so far reviews have been favorable of the new stadium design. The 24,000-seat stadium features 360 degree views of the game from the concourse. Fans and media have commented on the ease of movement and room on the concourse, especially near the concession stands, as well as, the extra room in the aisles compared to Rosenblatt's cramped quarters.

The light-brown exterior brick, a high definition video board in right field, unique crisscross light standards, and an eye catching blue-green press box and club level combine to give the stadium a contemporary aesthetic appeal. In regards to the overall experience, Almond said, "There was a lot of interface between design disciplines inside and outside of the stadium that improved the process. The client was very involved in the project and we were lucky to have them trust us to use the right materials for them."

With the new stadium filling so many other needs, for Almond and the rest of the design team, the pressure to be like Rosenblatt was traded for desire to make a new imprint in the Omaha community. "Mainly, the client and design team wanted this field to have its own signature look and feel and I think we've accomplished that." The CWS will be played in Omaha for the 61st time and at TD Ameritrade Park for the very first time June 18, 2011. ■