

cited and fined for the violation. After the accident is reported, OSHA, at their discretion, will investigate the accident and determine how the accident happened and what can be done to prevent the accident in the future. If you take a passive stance, meaning do very little in the way of safety in your workplace, OSHA could levy a fine against you and if the accident is serious enough your company could be fined in the 6 or 7 digit range.

On the other hand if you take a pro-active approach to safety (having an aggressive training program, keeping record of employees' training, and having regular hazard assessment programs in place) you might not receive a fine or the fine will be minimal. Also, if you are cited and you can show evidence you are implementing the suggestions OSHA has set forth, part or the whole fine can be refunded to you.

By law OSHA can come into to your workplace and inspect your safety records, make recommendations and if found inadequate levy a fine against your company. They can come onto your worksite and observe your operation; if your worksite is deemed unsafe OSHA can shut down your worksite until you have made the safety changes they have told you to make, this can also include levying a fine against your company.

SO WHAT DO YOU NEED TO DO?

First, set up and implement a good, sound Safety Program.

Second, keep detailed records of the Safety Training each employee receives and keep records of the all accidents that take place on the job no matter how small. Include on your accident form a "What do we do to prevent this accident in the future?" section on the form and implement those suggestions.

Third, implement a Hazard Assessment Program. Hazard Assessment is inspecting the work area for any potential hazards and fixing the hazards before someone actually gets injured. This is an ongoing process.

Fourth, re-evaluate your Safety Program, Hazard Assessment Program and make needed changes to your programs and then start over again. This is an ongoing process.

You might ask, "How do I do all this?" The answer is simple: go to <http://www.osha.org> and discover how to make sure your workplace is safe, secure, and OSHA-compliant.

What can OSHA provide for you?

OSHA offers online training; go to www.oshacampusonline.com/ for more information. OSHA will also come to your workplace and hold special classes for your employees on request. OSHA provides hundreds of publications available online at <http://www.osha.gov/pls/publications/publication.html>. They also provide On-Site Consultation (free of charge) to find out more go to <http://www.osha.gov/dcspl/smallbusiness/consult.html>. OSHA Offers a Compliance Assistance/Outreach Program, see http://www.osha.gov/dcsp/compliance_assistance/index.html. They also provide a section on recordkeeping, <http://www.osha.gov/recordkeeping/index.html>. These are just a few of many resources that OSHA provides.

Because OSHA oversees safety imple-

mentation for virtually everyone you may have to dig a little to find resources that relate to your situation and if all else fails you can contact OSHA directly. Go to the Contact Us section at http://www.osha.gov/html/Feed_Back.html.

If you do not have a sound safety program in place or you need to improve your existing program an OSHA representative will be happy to come to your workplace and help you set up or improve your safety program for of charge. Help is just a phone call away. ■

David Schlotthauer started working for the BYU Grounds Dept. in March of 1979. He has worked pruning trees and shrubs for 21 years and has spent the last 7 years as BYU Sports Turf Manager. David's responsibilities include the football field at Cougar Stadium, both the natural and synthetic turf at the football team's practice facilities, and over 40 acres of other fields. David also serves as the chapter president for the Intermountain Chapter of the Sports Turf Managers Association.

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How many hours DID YOU MOW LAST YEAR?

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to ask one question: How many hours did you mow in 2012?

I mow (on game days) the infield and skirts with the walk-behind greens mower, which takes about 45 minutes. On non-game days, I mow the same area with a walk-behind rotary mower. So that translates into: 70 games x 45 minutes = 52.5 hours on game days, and 40 non-game days x 45 minutes = 30 hours on non-game days. I also mow the outfield with the triplex 3-4 times a month. That allows me to get a good read on that turf. My assistant does the rest of the outfield mowing. So that would be 9 months x 4 mowings of 60 minutes each = 36 hours annually on the

triplex, for a total of approximately 118.5 annual hours mowing

—Keith Winter, head grounds-keeper, Fort Wayne Tin-Caps

Okay, we mow three times a week approximately with pedestrian cylinder mowers (professional), which takes 3 hours, and let's base this on one professional soccer pitch. We have under-soil heating and lights so we mow through the winter due to the growth we can achieve. The surface usually has a month off for concerts, etc. So, 11 months and approx 12 mowings per month = 36 hours per week x 48 = total 1,728 hours

—Phil Sharples, sports turf agronomist, Galatasaray FC, Worcestershire, United Kingdom

At our facility, we have 12 bermuda fields so obviously I don't do all of this by myself! After doing some quick math, I say we spend approximately 1,100-1,150 hours/year mowing. CRAZY!

—Allison Moyer, grounds manager, Collegiate School, Richmond, VA

As a crew, we mowed for roughly 500 hours last year. We maintain about 92,000 square feet. I personally probably only mowed for about 50 hours or so seeing as my crew members do most of the mowing.

—Chad Laurie, head groundskeeper, Buffalo Bisons

Our annual mowing window in mid-Michigan is 30 weeks.

We mow 16 acres of irrigated athletic fields 3 times per week at an average of 4.5 mph with a 72-inch zero-turn mower. Our productivity is 3 acre per hour. $(30 \times 3) / 3 = 480$ hours per year (out of 1,200 man hours, that's interesting).

The rest of the story is that two groundskeepers, Scott Falahee and Jeff Kotas, mow the athletic fields, each with a 72-inch zero-turn, which cuts the time in half which allows them to handle many other responsibilities. Once in while, I may mow to get a sense of the surface condition or help the guys during a busy week.

—Mark Frever, CSFM, director of grounds, Albion College

I say the total man hours is about 1,000 for my main campus crew; the Ambler Sports Complex crew are probably cutting about 2,500 hours per year (total man hours).

—Craig Roncace, turf manager, Temple University

We as a crew mowed about 1,200 hours last year. I personally mowed probably 900 hours. That is performed on soccer stadium field, soccer practice field and baseball stadium.

—Jay Warnick, CSFM, athletic fields manager, University of Portland

I mow a few other areas on occasion but primarily I mow Beaver Stadium. We start mowing the field around April 1 through the beginning of December, usually three times a week, sometimes four during the season. I would say somewhere around 350 to 400 hours of mowing the field for Penn State football.

—Paul Curtis, groundskeeper, The Pennsylvania State University

For my 8 acres of grass I mowed for roughly 175 hours last year.

—Roger Weinbrenner, CSFM, turf technician, University of St. Thomas

We have 27 total acres, nine of which are turfgrass. It takes 6 hours to mow those nine acres. We mow 1x/week in April and October, 2x/week in May and September, and 3x/week June through August, for a total of 468 hours a season on the turfgrass. For the non-turfgrass acreage, it is 48 hours total in July, August and November; 96 hours total in March, June, September and October; and 192 hours total in April and May, for a grand total of 912 hours.

—Wayne Treadway, director, Dandridge (TN) Parks & Rec

I personally mow an average of 90 hours a year. As a team we mow an average 3 days a week 6 hours per day for 9 months, that is 648 hours.

—Sam Burris, athletic field supervisor, University of Mary Washington

For a rough “guesstimate” it seems I spend about 780 hours on the mower here at Valley Ranch. I can’t believe I spend the equivalent of almost 20 work weeks on a mower.

—Chris Morrow, field supervisor, Dallas Cowboys practice facility

It looks like I spent about 735 hours mowing in 2012. This includes mowing the baseball and softball fields three times per week, and starting their mowing a couple weeks earlier than the rest of the complex, mowing the practice field twice a week, and mowing the non-field areas once a week.

—Kari Allen, CSFM, sports turf technician, Sodexo/Benedictine University

We roughly spend from April 1 to October 15 mowing about 30-36 hours a week, equaling 840-1,008 hours mowing. I have two part time seasonal workers that do most of the mowing weekly; I am involved about 8 hours a week.

—Dave Reiss, turf manager, Wasatch (UT) SD

My best educated guess is about 520 hours

—Patrick Francisco, facility manager, Smith River Sports Complex, Martinsville, VA

990 hours

—Mark Kubacki, superintendent/grounds, Saint Mary’s College, Notre Dame, IN

November through February we average 50-60 hours a month for the sports fields and common grounds. In

March through October we average 80-90 hours a month because everything is growing more and rain is more readily available.

—Vince Muia, head groundskeeper, Out of Door Academy, Statham, GA ■



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A large, empty stadium with a green field and tiered seating. The stadium is mostly empty, with a few people visible in the distance. The field is a vibrant green, and the seating is a mix of grey and blue. The sky is a pale blue, suggesting a clear day. The overall atmosphere is one of quiet anticipation.

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Advice from STMA Conference sessions on managing infield skins

AS ALWAYS, the Sports Turf Managers Association's Conference Education Subcommittee makes sure there are experts presenting on maintaining infield skin areas at its Conference. This past January in Daytona Beach was no different; STMA gathered Grant McKnight of Natural Sand; Bill Deacon, director of landscape and field operations for the New York Mets; Luke Yoder, director of field and landscape

» **LARRY DIVITO**, head groundskeeper for the Minnesota Twins, demonstrates how to add conditioner to a field during a previously held seminar.



maintenance for the San Diego Padres; John Turnour, head groundskeeper for the Washington Nationals; and Eric Blanton, manager for turf and grounds for the Reno Aces to conduct a panel discussion. Here are some highlights from that session:

Grant McKnight stressed to the audience the importance of knowing where you are starting from with regard to improving your infield mix. How much sand, silt and clay do you have now? Use that information and knowledge of how soils components go together to get the desired end product. McKnight also said turf managers need to understand what is possible on their infields based on the level of play and the level of maintenance on any given field.

It was McKnight and former MLB groundskeeper and now executive at Beacon Athletics, Paul Zwaska, who first came up with the "silt to clay ratio" that is quickly becoming state of the art in determining the right combination across the particle spectrum for infield mixes. McKnight said small changes in your mix can make huge differences in playability.

An attendee asked, "What is the minimum depth you want to till a skin when you are adding soil?" The panel's response was if you are amending your soil, go only into the top 3 inches, but if you are trying to build more permanent structure, you can't just scratch in material. For a new construction situation, 4 inches is preferred, but the panel added that if you are

using better materials you can get away with 3 inches.

Another question: "How can you judge compaction?" Answer: A real scientific method—after putting good moisture on your skin, can you easily put a key into and out of your mix? If so you are good.

Yoder recommended pulling a sample when you have infield sand or other material delivered and send it off for testing. "You have to be willing to send it back," he said. "The tests are cheap. Get a 2 millimeter sieve and take the sample when it's still on the truck. You can trust your supplier and still test."

Deacon answered a question about what depths the materials underneath the top 3 inches should be. "We just pulled ours out at Citi Field and it was like concrete; it wasn't originally made up of materials that I had recommended. We replaced it with sand and gravel which can release water better," he said. "We first put down 4 inches of 3/8-inch gravel, then 6 inches of sand, and then 6 inches of infield mix."

Yoder added that he doesn't recommend using any type of weed barrier when building an infield. "They are not necessary and it only messes with your moisture management," he said.

Dr. Norm Hummel, a noted luminary in the world of soil science and president of his own soil testing company, added from the audience that if you have a good native soil base you can get away with simply adding 3 inches of a good mix on top.

Adding material to your infield

Yoder recommended using a Harley rake drum attachment with metal studs to incorporate material into your existing

With just ½% grade you can get rainwater to run off without players even being able to tell it's graded.

mix. "At the high school level, for example, put your new material on top and then use the Harley rake for about an hour to till it in," he said. "If you are just adding material, you can even nail-drag it in.

"Tilling and grading is the ideal situation," Yoder said, "but if you till it in then you really should follow up with a laser-grading."

Question from the audience: "Should you add sand via injection on your skin?" Answer, from McKnight: "No, you have to incorporate sand into the mix. Adding straight sand is not recommended because eventually it just floats back up to the top."

McKnight continued: "A good infield absorbs water; it doesn't drain water. It should hold moisture and a good profile will hold water longer. If your infield is draining, it will eventually fall apart."

Yoder: "At the high school level, a hard and firm surface is better than having whatever material is on top blowing off. If possible, you should soak your infield for 30 minutes after a game, then nail drag it the next morning followed by using a drag mat."

McKnight: "At lower levels of competition, in the heat of summer, you are going to have more compaction so it is best to open up the infield skin after it rains but when the top 1/2 inch gets dry. Then drag it for a more consistent surface. At these levels you need to use calcined or vitrified clay for sliding purposes."

Rolling

Blanton: "I never roll my infield though we do use a hand roller on the edges. We let nature take its course. We roll after edging because we want to pack it down; it's more about playability than aesthetics."

Yoder: "We roll (1 1/2-ton) before homestands, just one or two decent rolls to tighten things up."

Turnour: "The day before a homestand we roll once to tighten it up, unless it is too dry; it's a fine line in determining when to roll. We roll our edges, with the roller half on the dirt, half on the grass."

McKnight: "If you use a roller, you must then use a nail board. And if you find you are using a roller once a week or so, you need to amend your infield mix; something's not right."

A question on using vitrified clay elicited these responses:

Deacon: "I have used it for sliding surfaces or to add color."

Yoder: "I don't use it; I think of it more as a warning track material."

Turnour: "I don't have much experience with vitrified and I'm comfortable with straight calcined."

Paul Zwaska, another expert in attendance, added that he thought that in a region like Washington, DC, vitrified clay might help moisture management.

McKnight: "If you are incorporating a conditioner into your soil structure, and you have better soil, you can use a product for its color or added durability or as a topdressing for extra absorbency."

McKnight answered another question on infields with high sand contents: "No, adding a pallet of calcined clay conditioner will not improve that mix." ■



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American Sports Builders Association's Field Award winners

HONORS were announced at ASBA's Technical Meeting last year in Orlando. Entries were scored individually based on considerations such as layout and design, site work, drainage, base construction, surface, amenities, innovation and overall impression. Winning entries were those whose cumulative scores meet or exceed the standard.

SINGLE FIELD FACILITY WINNER

In terms of facilities, **PK Park at the University of Oregon** is an outstanding two-season athlete. The facility serves as home field for the Ducks during the NCAA baseball season. Once school lets out, it hosts the Eugene Emeralds, a San Diego Padres class A Minor League baseball team.

And before that, it was a gravel parking lot that only saw use during Oregon's home football games.

According to Aaron Olsen of Cameron McCarthy Landscape Architecture & Planning in Eugene, OR the project needed to be completed in two phases. The first phase created a field and temporary facilities in time for the inaugural season of the university's baseball team in 2009. The program, which was being revived, previously had been disbanded in 1981, and now required an all-new home.

"Starting in 2008, our firm, in collaboration with the Phase I design team, participated in master planning/schematic design for PK Park to facilitate in giving the field a permanent location," notes Olsen. "Phase I was comprised of the permanent construction of the baseball field and subgrade drainage, field walls/fencing, outfield light structures, score board/video board, bullpens, player development area, and ADA parking."

The outfield light support structures in the field were a custom design and a nod to

the history of baseball and light structures at historical fields.

"The concept began as a sketch our office prepared, and Musco lighting, along with engineers, took from concept to the built element," said Olsen. "A synthetic turf playing surface, including the infield, batter's box and warning track, was chosen for its consistent playability in the Northwest region during the NCAA season (February to June), which is consistently rainy. Construction of temporary dugouts, bleachers, press box, and related site improvements was completed to accommodate the Oregon Ducks 2009 season."

When the collegiate season ended, Phase II of the project got underway. Work included the stadium itself (including dugouts, locker rooms, concessions, etc.), field lighting, plazas, and spectator areas.

Shortly after the Ducks' season ended, PK Park became a permanent home for the Eugene Emeralds. This also required some versatility on the part of the field, said Olsen.

"The batter's box is designed to convert from synthetic turf during the NCAA season to clay for the minor league season. A permeable asphalt pad with concrete headers was constructed to ease the transition between the materials and allow both to

Other Projects named as Outstanding Multi-Field Facilities

Fenn School - Reynolds Athletic Fields

Concord, MA
Upgrade of Existing Facility:
Stantec Sport (Boston, MA)

Lexington Center Play Fields Phase I

Lexington, MA
Upgrade of Existing Facility:
Stantec Sport (Boston, MA)

Pomfret School

Pomfret, CT
New Construction:
Huntress Associates, Inc. (Andover, MA)

Distinguished Single Field Facilities 2012

Stagg High School - Phase II

Stockton, CA
New Construction:
Verde Design, Inc.
(Santa Clara, CA)

North Canton Hoover Football/Lacrosse Stadium

North Canton, OH
Upgrade of Existing Construction:
Vasco Sports Contractors
(Massillon, OH)

Fairview High School

Fairview, PA
Upgrade of Existing Facility:
Vasco Sports Contractors
(Massillon, OH)

SCU Bellomy

Santa Clara, CA
Upgrade of Existing Facility:
Verde Design, Inc.
(Santa Clara, CA)

Lodi Grape Bowl

Lodi, CA
Upgrade of Existing Facility:
Beals Alliance (Folsom, CA)

Bodner Rugby Field at California State Maritime Academy

Vallejo, CA
Upgrade of Existing Facility:
Beals Alliance (Folsom, CA)

Goodreau Field at Villanova Stadium

Villanova, PA
Upgrade of Existing Facility:
Stantec Sport (Boston, MA)

John Gutierrez Stadium, Bloomfield High School

Bloomfield, NM
Upgrade of Existing Facilities:
General Acrylics, Inc. (Phoenix, AZ)

fully function. The pitching mound is clay. The turf is a 2 1/2" pile height. Infill is 1 3/4" deep totaling 9 pounds of sand and rubber per square foot. Crushed cinder rock, 1/8" minus, was installed at the warning track to create a tactile change from the field infill. Seams are sewn using the manufacturer's recommended methods. The perimeter of the synthetic turf is attached to a concrete header and composite lumber nailer board. The synthetic turf profile includes a minimum of 6" open-graded base rock at the field perimeter and gradually gets thicker toward the field centerline/collector pipe."

The warning track was made of 20' wide FieldTurf in a rust color with a thin top dressing of cinders to provide a tactile distinction from the baseball field. The infield skinned areas are FieldTurf Mini Pitch, 2-1/2" pile height with 1-3/4" on brown-colored sand/rubber infill.

Even the aesthetics of the synthetic turf were carefully planned, noted Olsen.

"The alternating striped pattern of dark green and light green colors was chosen for



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a few reasons: to mimic field mowing patterns commonly found at highly groomed grass fields of big league ballparks; to distinguish PK Park compared to other baseball synthetic turf fields; and to continue a brand identity associated with University of Oregon playing surfaces, most notably the alternating green patterns found at the Autzen Stadium football field."

MULTI-FIELD FACILITY WINNER

The ability to multi-task isn't just for the workforce any longer. These days, it applies to athletic facilities. Administrators and owners want venues that work as hard as they do, filling a variety of needs each day.

When **Homestead High School, Cupertino, CA** decided to rehab and improve their sports fields, their wish list was challenging, at best. Because the existing fields hosted an array of sports (football, soccer, field hockey, baseball and softball) throughout the school year, the surface had become worn and in some places, skinned, over time.

"The fields needed to be used year-round," noted Derek McKee of Verde Design, Inc. in Santa Clara, CA. And other challenges existed, since "the existing site was not ADA-compliant, and the fields were elevated from the campus."

The professional team met with administrators, athletes, faculty and more, and came up with a plan to overhaul the facilities. A synthetic turf surface was selected, and a series of fields was developed.

"Site improvements included the demolition of everything in the area," said McKee. In its place came a new plan that included two adjacent multi-use areas. One area has softball use, and the other has baseball. Each

Verde Design made an attempt to uphold eco-friendly standards throughout the process. The synthetic turf was DuraSpinePro from FieldTurf, with an infill that was 40% rubber produced from recycled tires frozen in a cryogenic process.



field has a multi-use outfield for other sports. Both fields have a varsity field area and another area for practice. Between the fields is a solar voltaic array that provides a nice shaded area for viewing the games, and great seating for the soccer and field hockey games with five-row bleachers."

Among the new amenities were new backstops, CMU dugouts, storage areas at the home dugouts, bullpens, perimeter fencing, scoreboards and site furnishings. Several ramps and stair connections were added to enhance accessibility.

The new fields, however, were not as easy to install as they were to describe.

"The largest obstacle was the grading system," said Olsen. "Existing grades sloped substantially due to the fact that they were natural grass, and had no drainage systems. We developed several concepts to review options for grading and earthwork quanti-

ties. The final result for these fields was a surface slope of less than one percent for the synthetic fields which created cut on one side and fill on the campus side. In the end, we did have off-haul, but it was limited based on the studies and planning effort."

Verde Design made an attempt to uphold eco-friendly standards throughout the process. The synthetic turf was DuraSpinePro from FieldTurf, with an infill that was 40% rubber produced from recycled tires frozen in a cryogenic process. In addition, pathways were added around the field, and over 100 trees were planted. Landscaping included native grasses and wildflowers for low maintenance and water use. In addition, LED site lighting was used.

In addition, Homestead took home the ASBA's 'Green Award,' bestowed upon one project per year, for excellence in eco-friendly design and construction. ■