Just as fields for various sports have different size and marking requirements, they have different slope and crown requirements. A qualified field contractor will know the correct figures for each sport and, since tolerances are very exact, will probably use laser-guided equipment to achieve them.

“The key to good drainage is moving water the shortest distance possible in order to get it off the field,” says Wright. “For example, in a baseball field, you wouldn’t want it to drain from home plate to the outfield.”

The high point of a baseball or softball field generally would be the pitcher’s mound, which is 10” above home plate. The field is then sloped in all four directions away from the mound and across the skinned areas.

Rectangular sports fields, those used for sports such as soccer, field hockey, lacrosse and more, also have specific slope requirements and generally include a crown running down the center of the field so that water drains in two different directions, toward some type of collector drain system described above. (An exception to this rule would be a grass tennis court, which while it is a rectangle, must drain in one true plane). Different governing bodies, such as the NCAA or the NFHS, will require varying degrees of slope for each sport. Ascertain you are working with the most current version of the rules for the correct governing body prior to embarking on any grading work.

Assuming your facility design now ensures that all the water now falling on your field is from precipitation or irrigation, and assuming your field design includes correct slope, you can concentrate on some of the additional mechanisms used to help natural fields drain properly.

A subsurface drainage system (so called because it manages water that makes its way underground) can help fields dry more quickly, avoiding rainouts, unsafe conditions for athletes, and the chance of the turf being torn up while a game is in progress. Unfortunately, extra drainage, because it is invisible to the naked eye (unlike, say, a new scoreboard or a press box) is where field owners sometimes skimp, trying to save money. However, experts agree that both the usefulness of the field and its long-term performance, are tied to having an effective drainage system.
Irrigation & Drainage

Many factors must be considered in determining the correct drainage system, including (but not limited to) soil type, local precipitation, field use, budget, existing slope and local regulations. Work with a design professional to help choose the right type, with the correct specifications for the amount of water you want to move.

The traditional type of drainage system for a sports field has been the pipe drain which uses perforated pipe placed in trenches in the subgrade. These pipes are laid in trenches, surrounded by coarse sand or clean stone to within 4 inches of the surface of the subgrade and capped with sand. Water then drains through the rootzone and stops in the trench where it enters the pipe from the bottom. Drains are typically placed 3 to 10 feet apart for native soil, and 10 to 30 feet apart for sand-based fields. They are surrounded by clean stone or coarse sand.

Another type of system exists: flat drains, sometimes called strip drains, 6 to 18 inches wide and 1 to 2 inches thick, without a wrapping of filter fabric, which are placed horizontally on the subgrade during construction. They also may be trenched in and placed vertically after installation of the rootzone in either native or sand-cap fields.

In addition, say builders, there’s the least expensive (and still highly effective) sand vein system, sometimes called a sand silt system. This in particular works well in a native soil field, says Devin Conway, Verde Design Group, Santa Clara, CA when attention is paid to the finer points of installation.

“A few items I would suggest an owner consider for natural turf fields in terms of drainage (assuming the field is not sand-based and the native soil has high levels of silt and clay content) would include a drainage system that extends into the playing field area, and not just at the field’s low points,” says Conway. “An example of a system that would suffice is a slit sand drainage system, which would have a series of shallow trenches (typically less than 12 inches in depth, typically no wider than a few inches) filled with sand or blended imported rootzone materials with known high infiltration rates) at a relatively narrow spacing (typically less than 3 feet on center) that are crossed by deeper trenches (typically around 12 to 18 inches in depth, typically between 2 and 6 inches in width) with small diameter perforated drains. These drain trenches run perpendicular to the shallow sand trenches and follow the field slope in order to de-water the field. This type of sand drainage system is a cost-effective method of building into a native soil field some of the same benefits of a sand-based field, without many of the large construction costs, and the field also uses much less water than a traditional sand-based field. Other traditional methods of drainage for a natural turf field include surface drain inlets (though these should only be used outside the area of play for obvious safety reasons) and subsurface drain tiles, such as French drain.”

And sometimes, says Andy Hord of Precision Sports Surfaces, Inc. in Charlottesville, Virginia, those tried and true systems last because, well, they’re tried and true.

“Last summer, I started to dig up a 30-year-old sand-based drain along the edge of a track we were stripping and overlaying,” Hord notes. “After tearing out the first 50 feet we stopped as it appeared to be working as well as it did the day it was put in. We stopped and rebuilt the part we had removed.”

MAINTENANCE

It’s the least glamorous of all subjects when it comes to fields. Everyone knows about mowing. Most everyone knows about proper irrigation. But not everyone, it seems, knows about maintenance beyond that.

“Proper maintenance will really help drainage issues,” says Dan Wright. But, he adds, like drainage itself, it’s where too many cut back in order to save money.

“If you’re a pro team or a major university, you can probably afford it,” he notes, “but a park and rec or a local high school often has budget issues, and that’s where they might cut.”

Conway recommends doing regular walk-throughs of fields to keep an eye out for problems.

“Tell-tale signs to keep an eye out for include the obvious, such as standing water after irrigation cycles or rain events, as well as soft areas, even in warm weather, which can indicate water is not getting through the soil profile quickly.”

He also recommends going over all aspects of the drainage system in order to make sure it isn’t degrading with time.

“As with any system, the drainage infrastructure should be checked at least on a semi-annual basis. If the field has a slit sand drainage system, it is recommended the shallow sand trenches be supplemented with additional sand at least every ten years, if not sooner, in order to continue to improve the water pathways to the in-field piping (and as an added benefit, it improves the soil characteristics of the native soil field over time by improving the sand content in the playing field). Drain lines and surface drain inlets should be inspected and cleaned, and low spots and depressions should be addressed so that the water can flow uniformly towards the intended drainage vehicles.”

Of course, says Hord, not all maintenance people have been trained in proper field care.

“We see people covering storm inlets with impervious covers and leaving them in place,” he says dryly. “Makes me scream.”

Keep inlets clean, and keep Bermuda grass trimmed back in order to facilitate drainage. If a track encircles the field, check the adjacent drains routinely to make sure they have not become covered or clogged—something else that contributes to water ponding on both the field and the track.

If, as with a baseball or softball field, there are skinned areas that are dragged in order to ensure uniformity, make sure the dragged material isn’t creating a dam at the edge of the grass and impeding drainage off the field.

Mary Kay Sprecher wrote this article on the behalf of the American Sports Builders Association, which helps designers, builders, owners, operators and users understand quality sports facility construction. www.sportsbuilders.org

Most everyone knows about proper irrigation. But not everyone, it seems, knows about maintenance beyond that.
THE DARK GREEN TURF around mound is actually artificial turf. The coaches at this high school baseball field did not like the worn keyhole in front of the mound. They also did not like re-sodding the front of the mound because it is a difficult area to keep grass growing during the season. So the coach wanted to try something different and heard that artificial turf might be a good solution to their problem. The baseball infield is bermudagrass and in the fall it is overseeded with perennial ryegrass for the early spring games. The artificial turf was installed in a strip around the mound and in a square in the landing area directly in front of the mound. The artificial turf was then filled in with sand and rubber, leaving about a half inch of blades showing. There were concerns about keeping the clay out of the material but it went through the spring pretty well. The contractor reports that this was the first install they had done of this type but the coach seems pretty happy with the results so far.

Photo submitted by Sam King, part-time grounds crew member for Southern Athletic Fields, Inc., Columbia, TN and sports turf student at Middle Tennessee State University.

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.
Chainsaw use, maintenance & safety

Editor’s note: This information was supplied by Husqvarna.

The old adage, “The right tool for the right job” is vital when choosing a chainsaw. It is important to consider how often the saw will be used and what it will be used for. Look for design features that promote good balance and ergonomics, low vibration and high power-to-weight ratio. Operating the right saw will help reduce fatigue and the risk of injury that comes with it while increasing productivity. And when in doubt, ask a professional user for a recommendation based on the job at hand.

Regardless of application, the most overlooked aspect of chain saw operation is protective equipment (PPE). A properly outfitted operator wears protective chaps or pants, eye and ear protection, appropriate footwear, work gloves, and a helmet with visor. The proper protective equipment cannot eliminate the risk of injury completely but it can reduce the severity of an injury should an accident occur.

Leg protection comes in various types of chainsaw protective pants and chaps which contain material designed to reduce the risk or severity of an injury and give the operator extra reaction time when contact is made by a moving chain. They should be worn snug and overlap the top of the boot by 2 inches.

Head protection is essential since more injuries occur to an operator being struck by overhead limbs, branches or the tree itself than being cut by the chainsaw. The helmet should allow the user to look directly overhead and also bend over and touch toes without the helmet moving.

Eye protection should be panoramic with minimal field of view distortion and include UV protection. There are inexpensive anti-fog products available if that becomes an issue during the hot summer months.

Hearing protection reduces harmful decibel levels while maintaining communication abilities.

Footwear and hand protection should be appropriate to the known job hazards. Chainsaw protective gloves not only provide protection against cuts and scrapes but also oil and fuel.

Before pulling the cord, it is important that users conduct a visual inspection of the saw looking for any damage or leaks. Here are some key areas that need to be addressed:

External—Look for cracks, leaks, lose hardware and modifications to the saw. Check the chain tension so that it does not sag from the underside of the bar but, can still be rotated by a gloved hand. Make sure the muffler is securely attached and check for a broken or worn starter cord.

Fluids—Fill the gas tank with fresh correctly mixed fuel and the oil reservoir with chain oil. Fuel with an ethanol rating higher than E-10 should not be used.

Air—Check and clean the air filter regularly by blowing lightly inside to outside, brushing or tapping lightly, or soaking in water and mild detergent, rinsing and letting it dry for 24 hours.

Cooling system—Blow or brush the flywheel fins, cylinder head fins and air intake on the starter cover.

Safety features—Check that the chain brake, throttle lock control and stop switch are working and free of damage. Make sure the chain catcher is in place and the anti vibration system is working properly. Safety features reduce the risk of accidents, but they must be fully operational to work.

Bar, chain, sprockets—Make sure the chain’s cutting teeth are properly sharpened and depth gauge setting is correct. Inspect for visible cracks and wear in rivets and links. Remove the bar and check for a flat top rail. File burred side rail edges of the bar which can create drag while cutting. Clean out the bar groove and the chain oil hole that allows movement of oil from the saw to the bar groove. Rotate the bar regularly for equal wear. Check that the bar tip sprocket turns freely and that the teeth are rounded and not pointed. Check the wear on the chain drive sprocket and replace it when replacing the chain.

Preventative maintenance will help ensure the chainsaw is in top operating condition and will help ensure features designed to minimize exposure to potential hazards continue to work properly and increase operator safety.

When using the chainsaw, understanding the three reactive forces of a chain saw; push, pull and kickback will help prevent accidents. Never cut with the upper half of the tip of the bar. Kickback occurs when the tip of the bar comes in contact with an object or gets pinched during operation, causing the bar to “kick” up and back towards the operator and result in a loss of control and possible injury.

The common thread in pre-operation planning for chainsaw safety is that it is preventative in focus and emergency preparation is no different. It is imperative to know the answer to the question “what needs to be done if an emergency occurs” and develop a plan for specific situations. This will help identify potential hazards beforehand and create an organized response if an emergency occurs. First-aid training, a first-aid kit on-site, cell phone or mobile communication programmed to the nearest emergency care facility, directions and distance to that facility and communication with someone who knows where the worksite is, what type of job is taking place and how long the crew will be there are a few basic components to a good emergency plan. No matter what, never work alone.

Advantage 3050 topdresser

The Advantage 3050 Topdresser by TurfTime Equipment spreads wet or dry materials in less time and with less soil compaction. The even 50 ft. wide spread pattern allows topdressing with fewer passes, reducing repeated impact of both the topdresser and the tractor. Four wide Galaxy turf tires give the Advantage 3050 the lightest footprint of any topdresser of its size. Operators will appreciate the 8 ft. hopper that holds 5 yards level or 6.5 yards heaped and eases spill-free loading with bucket or super sack. The Advantage 3050 has a wide belt and the largest spinners in the industry allowing higher spread rate than the competition.

TurfTime Equipment, LLC
Turfco improves T3000 spreader and sprayer

The redesigned T3000 spreader and sprayer maintains the overall compact design that can fit through a 36-inch gate while still offering 6- and 9-foot wide spreading widths. Optional electric start available. A 16-amp charging system provides greater versatility in mounting accessories. Cruise control helps maintain speed while freeing operators’ hands to control spreading and spraying. “Customer feedback is the driving force behind these changes,” said Scott Kinkead, Turfco’s vice president. A new variable speed diaphragm pump features Viton valves for extended life and minimized maintenance. The T3000’s unique, adjustable, high-pressure, high-velocity systems creates larger droplets for the best spray on the market with less drift and fewer callbacks. An improved spinner design is longer lasting and easier to maintain.

Turfco

Topdressers from STEC Equipment

STEC Equipment offers a comprehensive line of Topdressers tailor made for the Sports Turf Manager. With 4 models available, there is a perfect sized machine for any job or application. STEC material handlers also come with a wide variety of features, allowing you to customize the machine to your individual needs, while remaining within budget limitations. Some of these features include wireless remote, self-contained hydraulic systems, spinners with angle adjustment, turf tires, and side conveyor swing arm. Models are available for all major utility vehicles, including the John Deere Gator, Cushman Truckster and TORO Workman. Tow behind models include varying hopper sizes from 14 cu ft to 6.5 cu yds. You have power options as well, including Self contained with Honda Engine, PTO Pump hydraulic system, or power supplied by your current tractor hydraulics.

STEC Equipment

New water-removal pumps

Underhill’s expanding line of Gulp water removal pumps now features the Gulp UltraMax and Big Gulp UltraMax, which can displace 8 to 12 gallons per minute. Featuring a super smooth pumping action, the UltraMax models efficiently eliminate water from valve boxes, sprinklers or any other flooded area. Gulp UltraMax has a 14-inch pump chamber and an 18-inch outlet hose. Big Gulp UltraMax includes a 36-inch chamber and flexible outlet hoses in either 36-inch or 72-inch lengths. Both Gulps have durable pump shafts and are self-priming. Underhill’s Gulp Series also includes the popular Gulp Syringe Ultra, a mini-model with 12-inch pump chamber and 12-oz stroke, a handy tool for small clean-ups.

Underhill

New, versatile outdoor synthetic adhesive

NORDOT Adhesive #34P-4 from Synthetic Surfaces Inc. is a new, one component outdoor adhesive that was designed to install and/or repair synthetic turf and other outdoor surfaces in widely variable and sometimes hostile weather conditions. It fills the need for a versatile adhesive which allows the outdoor installation and repair season to expand from only “fair weather” days to year-round. Product can be applied to a dry or damp surface at any outdoor temperature and humidity in which a mechanic can work. It is particularly useful in cold weather, when installations and repairs usually stop because, to our knowledge, no other adhesive can be used for installations from hot desert temperatures down to below freezing.

Synthetic Surfaces Inc.

Broyhill’s Stadium Vac

Broyhill’s Stadium Vac is a totally self-contained vacuum for turf vehicles and RTVs. Unit features a new 20.8 hp Honda engine and wireless remote controls for suction hose height (up-down) and distance (in and out from vehicle). Trash is collected in the 1 cubic yard container and no trash goes thru the impeller. Perfect for parks & rec departments and along bike paths.

Broyhill

www.stma.org
JOHN WATT, CSFM, athletic field manager for North Kansas City Schools, and his crew, Brian Gaa, James Pilgrim, and Russell Gentry, won the 2010 Sports Turf Managers Association Schools/Parks Softball Field of the Year. These four men are responsible for maintaining 30 fields spread over 90 square miles; the winning field is home to four separate high school softball teams.
Here are some of John Watt’s comments from his award entry:
“I started out the year like every other, deep into planning trying to be proactive. Then the news came about budget cuts. Next came talk about lay-offs, contracting out services, and decrease in wages. How do you get the crew motivated for the upcoming seasons of play that we were about to endure, ran through my mind. [But] with our dedication that question quickly faded as the snow melted and warmer temperatures arrived.

“The District Activities Complex (DAC) Softball field is played on in the fall by four high school girls’ softball teams. It lies on the property of one high school, so they have taken ownership of it where the team conducts camps, practices and games. When fall practice begins in August till the end of the season in October, the field is used continuously by the teams.

“This fall was the third season that the field has been in play. After reviews with coaches and players the number one complaint of the field is how hard the red shell infield becomes. Having a crew of three and taking care of 30 athletic fields over a 90 square mile area, hand watering the infield on a daily basis is not an option. To try and eliminate the problem of “bad hops” and hard pan, we started incorporating calcined clay into the top 2 inches of red shell. In theory it would help reduce the compaction and retain moisture, as it does when amended into turf.

The addition worked on firmness, but it brought up a new problem. There was foreign debris and large limestone that was mixed into the red shell from installation. This was solved by doing a “rock party cleanup,” with some assistance by players during practice.

“Spending the extra money on the infield caused a short fall in the budget, meaning less to spend on the turf. The field still received 3-4 lbs. of nitrogen and overseeding, but when the turf was invaded by dollar spot, there were no dollars for treatment. Instead some cultural maintenance was performed. Half rate of nitrogen was used in a month cycle and we reduced mowing and leaf wetness. Once the temperatures cooled down, solid tine aeration at four inch depth was completed. Before no time, there was a 98% turf recovery.

“Through a limited budget and some unpredictable weather, my main goal of keeping a safe, playable field was met. This was accomplished due to creative practices and the hard work that was put forth by the crew and coaches.”
**Softball field maintenance, North Kansas City Schools**

**MARCH**
- Start mowing once a week
- Charge irrigation/make repairs if needed

**APRIL**
- 32-0-8 at 1 lb. of N
- Mow weekly
- Spot spray any weeds
- Irrigate as needed
- Mow weekly

**MAY**
- Dress up warning track
- Mow weekly
- Irrigate as needed
- Core aerate

**JUNE**
- 0-0-7 with .067% Acelepryn
- Mow weekly
- Irrigate regularly

**JULY**
- 22-0-3 50% at 1/2 rate of N
- Mow weekly
- Irrigate regularly

**AUGUST**
- Mow weekly
- Irrigate regularly

**SEPTEMBER**
- 22-0-3 50% at 1/2 rate of N
- Drill 9 lbs./1000 blue/fescue seed mixture
- Solid tine aerate
- Launch application

**OCTOBER**
- Winterize irrigation
- Mow weekly
- 32-3-8 at 1 lb. of N

**NOVEMBER**
- Put field to bed

**SportsTurf**: What changes have you made to your maintenance plan for 2011, if any?

**Watt**: During the “off-season” from field usage, we have implemented a consistent dragging program of the field to try and keep the material in the current location. The field has great surface drainage to the outfield corners, but it causes the infield material to migrate off. A consistent dragging of the infield also helps control weed infestation. As for the turf areas, aeration has been increased two extras times a year to help improve water penetration into the soil.

**ST**: What’s the best piece of turf management advice you have ever received?

**Watt**: This is a great question and through my years of being an athlete, going to school, and work experiences I still think about it. Don’t try to figure out what the head coach is thinking, go out and do your job, even you can impress yourself. On days when you come into work and see what happened to the field from the night before, don’t get discouraged, it is your time to shine. Always keep challenging yourself.

Don’t try to figure out what the head coach is thinking, go out and do your job, even you can impress yourself. On days when you come into work and see what happened to the field from the night before, don’t get discouraged, it is your time to shine. Always keep challenging yourself.
ST: How do you balance your work and personal time?

Watt: The crew is what makes things happen. I know that the work that is scheduled will be completed and that the athletes will be provided with a safe field to show their skills on. We are a small crew but we get things done. Oh, and a cell phone!

ST: How have you been dealing with reduced budget if indeed that is the case?

Watt: The public education system has seen its fair share of budget cuts. As a manager, I stress the importance of taking care of the equipment through regular maintenance and proper operating practices. We need to get many more seasons out of the equipment. There also have been some adjustments on many of the fields with only treating areas that really need it. I think of Dr. Minner’s statement about “a field within a field.”

ST: Are you yet involved in “sustainable” management practices? If so, what are you doing?

Watt: Working around children of various age groups, we have to be cautious of the work and products we use. For most of us, it has become second nature through common practices of proper irrigation, selection of products according to soil analysis, and timing of applications. Majority of the products I use are 30-50% slow-release and have had great success.

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**STMA Field of the Year Awards**

The 2011 STMA Field of the Year Awards Application is available online at http://www.stma.org/professionalism/fieldyr/

Read the instructions for submitting carefully, as the process is entirely electronic this year. While not a true “online process,” applicants are required to fill out the forms and submit their materials (forms and photos) via email, the internet or a flash drive or CD. It is the intent of the Awards Committee that this process allow for remote judging of applications, provide a level playing field, and really help the “story” of the field and crew shine through.

The deadline to submit your application for 2011 STMA Field of the Year is Friday, October 15, 2011.

STMA Field of the Year Awards may be presented in baseball, softball, football, soccer, or sporting grounds and all entry materials must be submitted in accordance with the procedures outlined for each award. All award recipients will be selected by the STMA Awards Committee made up of highly-regarded STMA professionals. Award winners will be notified in November via phone and email. Those not selected will be notified via email in November as well.

If you have any questions about the program, please call STMA Headquarters at 800-323-3875.

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**Equipment used at District Activities Complex**

**Softball Field**
- B&B 200-gallon sprayer
- RBG-1012-C blade grinder
- Graco 3900 Line Lazer IV
- Graco Field Lazer
- John Deere 1200A Infield Pro
- John Deere 4320 Tractor
- Aercore 1500
- John Deere 797
- John Deere backpack blower
- John Deere Pro Gator
- John Deere Turf TX
- Kubota M4900 tractor
- Lesco HPS spreader
- Redexim overseeder
- Quickpass topdresser
- Schaben sprayer
- Turfco Edge-R-Rite II
- Turfco Sod cutter
- Vicon
- Woods box blade
How did you prepare for the CSFM Exam?
KAUFMAN: I read the book *Sports Fields* by Puhalla, Krans and Goatley; I also attend Dr. Koski’s presentation on preparing for the CSFM exam at Conference.

How did you approach your employer to support your certification, both financially and in the time needed to prepare for the exam?
KAUFMAN: I paid for it myself as it is something that I personally own not my employer. However, I do now submit the annual renewal fee for reimbursement.

Why did you decide to pursue certification?
KAUFMAN: To obtain the highest professional recognition at what I do.

How has certification helped your career?
KAUFMAN: My employer has recognized it in the community newsletter; potential employees have sought employment with me as a result. I have letters after my name for professional recognition as does a CPA or even a doctor, this markets my education and experience as a recognized professional and separates me from the perceptions that anyone can do what I do for vocation. I believe I was elected to the STMA Board as a result of CSFM status which is a highlight of my career.

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**Ask a CSFM**

**Martin Kaufman, CSFM, Head Groundsman and Sports Field Manager, Ensworth Schools, Nashville, TN**

**Benefits of certification verified**

*Editor’s note: This is another installment on how becoming a Certified Sports Field Manager (CSFM) can benefit turf managers professionally as well as improve their facilities*

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**Bylaws language** for a new Retired Category of membership was approved by the STMA Board of Directors at its summer meeting. Initially brought forward from the Membership Committee for discussion last year, the board tasked the Bylaws Committee this year to formally develop the language for the Bylaws. The new category is STMA’s tenth category of membership and is non-voting.

“3.4.4 Category X - Retired: Person who is retired and no longer seeking full-time employment within the scope of activities of any STMA membership category, and who has been a member of STMA for five years, may become a non-voting member of STMA and is not eligible to hold elective office.”

The Board developed this category to be inclusive and keep retired members involved in STMA. The Bylaws Committee also developed a Standard Operating Procedure (SOP), which further clarifies retired status:

- To be eligible, the person must not be employed in a full-time position, which is defined as 30 hours per week or more.
- The 5 years does not need to be consecutive. A person is eligible if they had a break in membership, but their years of membership add up to 5 or more.

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