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pore space I want to create. Always soak the infield the night before, or do this procedure after a rain so the skin base mix is not hard and dry. Moisture will determine this method's success. Of course, you still reroll the skin once you've dragged the infield after this operation.

One caution: never till or aerate your skin with the intention of leaving it open to help moisture soak deep. I have seen too many people end up with a quagmire because of this. Always roll your base first before adding water. There will still be plenty of pore space left.

When I open the skin with an aerifier, I usually relevel my infield skin mix at the same time. When you are releveling your skin, you are basically rechecking the grade of the base mix from front to back to ensure that it's a smooth grade with no high or low spots.

When doing this, it's important to have your topdressing removed to allow the soil you add to properly adhere to the existing infield base soil. A nice, deep spiking of the skin works well to loosen the top inch or so to make it easy to cut

down high areas. It also allows any soil you add to low areas to mix and bind better with the existing base mix.

You should relevel your infield at least once a year, and twice if it receives year-round play. At Oriole Park, we level our base mix three to four times per season. Frequency should be based on how mobile a base mix you have, the level of activity the field receives, and your manpower and time availability.

Releveling allows you to cut down any high spots and fill any low areas. These areas can develop for two reasons: high concentrations of play (around bases and players positions), and dragging/grooming patterns you use on the field.

We check our grade by running a tight stringline from the turf edge at the front of the infield to the turf edge at the back of the infield. It's important to remove any lips at the turf's edge before you run your stringlines, since they can seriously throw off your grade reading. Roll and soak the base once you've completed the releveling project.

• **Topdressing:** When you initially put your topdressing over your base mix, it should be spiked into the top 1/2 to one inch of the base mix. Once you're finished

working this in, drag it and water it. Adjust your topdressing application so that you have about 1/4 to 1/2 inch of loose topdressing on top, and maintain that throughout the season by replenishing when necessary.

Spike your infield on a regular basis to smooth out cleat marks and other imperfections. You shouldn't have to cut deeper than 1/2 inch. Follow up by dragging and watering the skin. Again, keep that skin moist as much as possible during the season.

Special pure clays are used in the batter's boxes, catcher's box and the pitcher's landing area. Topdressing these areas takes a little more care. This clay is chewed up by cleats and eventually spread around into the topdressing, so it's a good idea to sweep off and replace this topdressing on a regular basis.

When that clay mixes with the topdressing, it inhibits the flow of moisture and makes the topdressing very sticky. This makes it hard for deep watering of the mound and homeplate skin areas. At Oriole Park, we usually replace ours after every third game.

If you use dry line chalk to mark your

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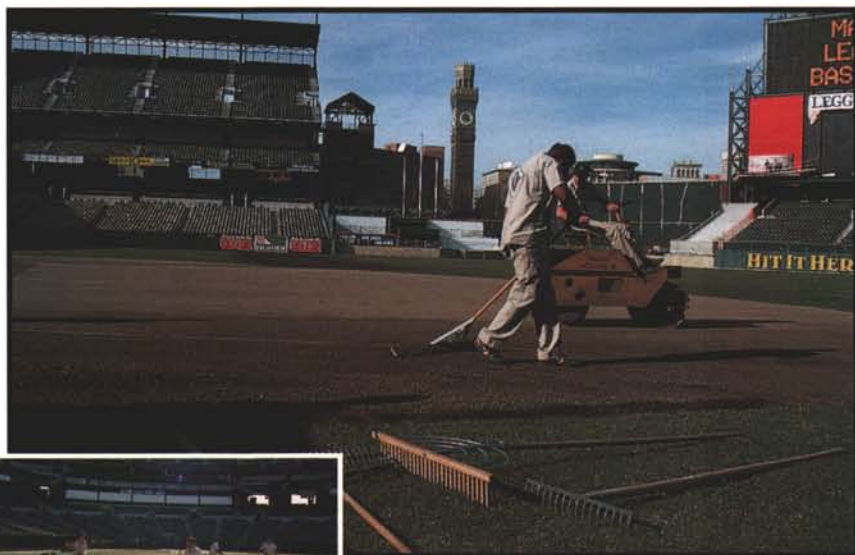
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Relevel your skin periodically to prevent drainage problems caused by high and low spots.

Courtesy: Paul Zwaska

foul lines and batter's boxes, it's a good idea to scoop up what's left of the lines after the day's games. This will prevent the chalk from becoming part of your

skin mix, which can cause discoloration, a change in your soil texture over time, and a decrease in the flow of moisture into the base mix. Finally, as you head into winter, when the field will be

unused for several months, either scrape the topdressing off the field and

remove it, or create a catch basin an inch or so deep in the skin wherever the skin meets the turf. This prevents large amounts of topdressing from blowing into the turf edge and creating large lips during the windy months of winter. Here at Oriole Park, we do both as a good preventative maintenance practice for lips.

Remember, these are just guidelines to help you make better decisions when building, renovating, or maintaining an infield skin. There are many variables, especially when it comes to soils.

It's the responsibility of each groundskeeper to know what makes an ideal skin and to apply that knowledge. Use the resources available to you. You may not have the time or dollars to create the perfect skin infield, but you can't improve what you have unless you know what you're working towards. □

Paul Zwaska earned his B.S. degree

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Baseball Field Renovation

by Tim Moore

"If you build it, they will come." Every sports turf manager deals with increased demand on newly renovated fields. If you make a field better, expectations increase and you have to do an even better job of field maintenance to accommodate the increased play. This may seem like a double-edged sword, but I'm sure it's one we all wish to wield.

When does a baseball field need renovation?

Periodic assessment of existing field conditions will alert you to persistent or recurring problems that are too severe to be solved by intensified general maintenance.

In most cases, especially at levels below professional play, renovation wins out over rebuilding. Limited budgets, limited space, and heavy field-use demands all contribute to this decision.

One of the most common reasons to renovate is wrong field grade. That's what prompted me to renovate one of my high-caliber baseball fields. This particular field's bases were off by as much as six inches.

The following is intended to be a guide for successful renovations. It's based on my experiences doing some things right and doing some things wrong.



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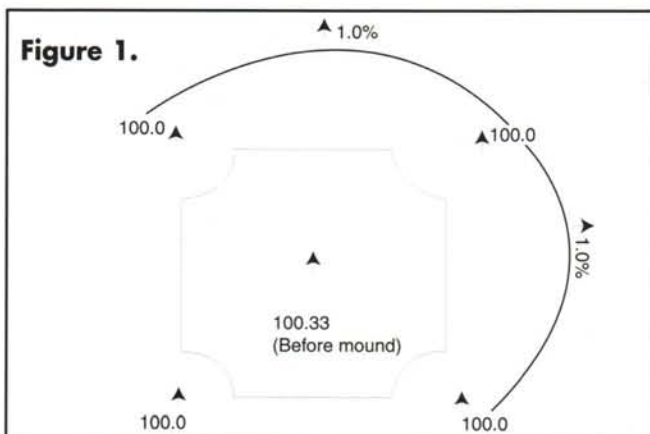
Plan for success

Steven Covey said, "Begin with the end in mind." Every one of us would like to have fields that look like the one at Oriole Park in Baltimore or the one at The Ballpark in Arlington. Start your planning with that picture in mind. Every step in the process will have an effect on the end product.

You can use the same type of specifications they use at the professional level to renovate your own field. The principles used in the field surface can be the same.

The major difference lies under the surface at the root zone. Most of us don't have the funds to have eight to 12 inches of highly modified, precisely graded soil profile. Do the best renovation possible within the limitations of your own program.

One of the most important specifications, and one that shouldn't be compromised, is grade. Maintain a precision grade (see **Figure 1**). The elevation of the four bases should be exactly the same. The center of the infield should be four inches higher, and it should radiate out to the bases. The outfield should slope from the arc at a grade of approximately one percent.



You can achieve this precision with the right equipment: graders equipped with lasers. Laser technology has revolutionized grading. You can now expect results to within 1/8 inch of perfection. Try to get that with a transit and stick!

If you're contracting out your field renovation, accept nothing less than precision laser equipment.

Construction steps

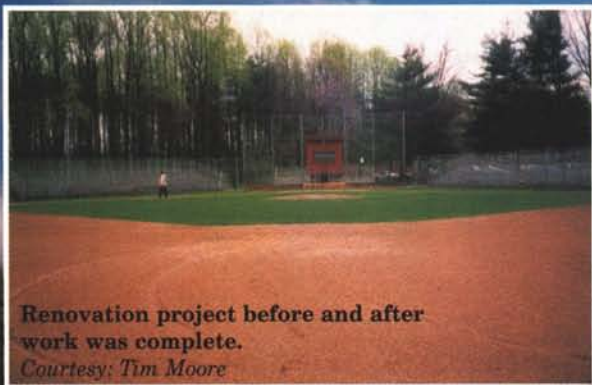
Time your renovation to fit your program. Complete all pre-construction planning earlier, so work can begin right away. I try to do my renovations in the winter off-season, so as not to interfere with scheduled play.

- First, remove the existing turf. Use a sod cutter to cut out the areas to be removed. If the turf can be used in other areas outside of the field that are under your maintenance, it can be moved to the desired site and installed. If the turf isn't of useable quality, it can be back-dragged into a pile with a front-end loader or grader and then loaded up for disposal.

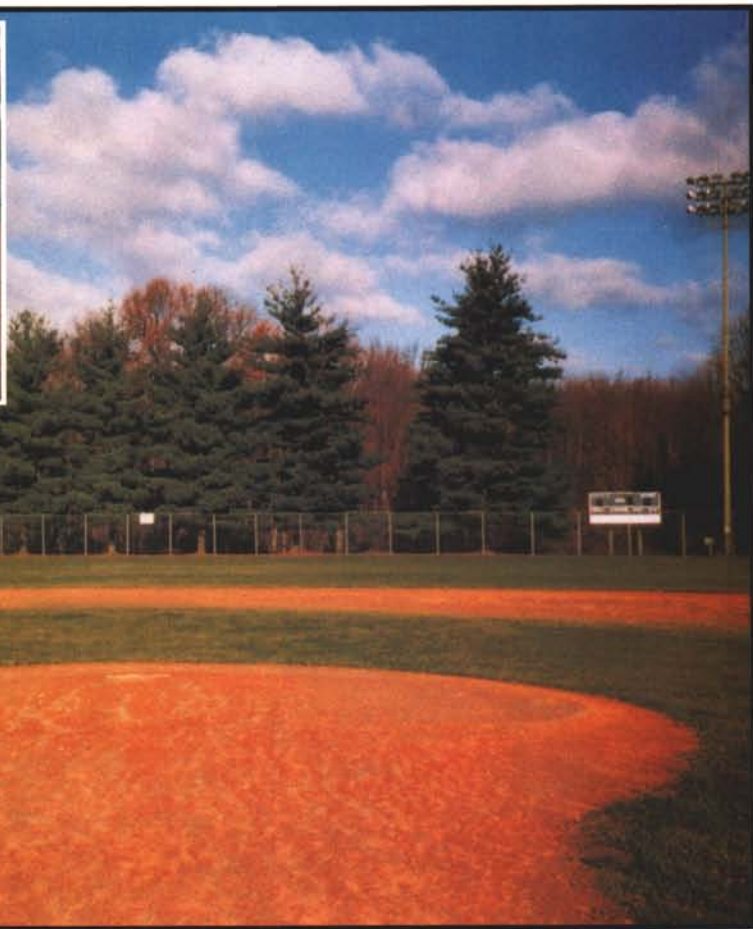
- Now that you're ready to grade, grade for precision. Get the infield to the relative elevations noted above. This is the time to make any drainage improvements.

Plan for drainage problems up-front. If you don't plan for drainage, you'll inevitably have a water problem when the renovation is completed.

I opted not to install a four-inch drain line between the baselines and the fencing and backstop when the field was opened in December; there had been no previous drainage problems in that area. In May, after several complaints about standing water, I



Renovation project before and after work was complete.
 Courtesy: Tim Moore



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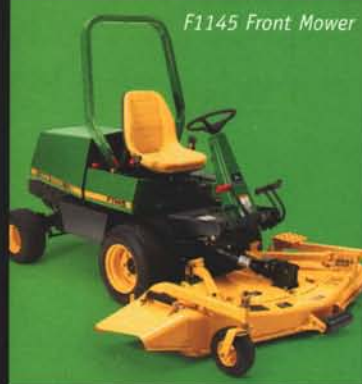
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put that line in anyway. It cost me probably twice as much as it would have in December.

• Now it's time to incorporate any soil amendments. The spreading of amendments should also be done by laser.

I've had success using calcined clay under my turf. The properties of the calcined clay help with the overall soil composition, and it provides absorption capacity that buys me time in the moist months.

After the amendments are incorporated, regrade and roll the field.

• Prepare your skinned area next. Lay out the area with strings, and remove material to the desired depth. Install your new infield mix. There are almost as many mixes as there are groundskeepers, so use what works best for you.

• After your baselines are complete, you can get ready for sod. This operation should also be precise. You must not compromise your grade.

If you're using pallet sod, make sure you have protected access for the spyder. If using big-roll sod, insist on high flotation tires or a track system that greatly reduces the machine's psi.

Once the sod is laid, fertilized, watered,

rolled, and edged, you can finish the skinned portion of the field.

• Bring the skinned area to the desired grade and incorporate any amendments. Prepare your home plate area for clay and build your mound.

The height of your mound rubber should be 10 inches above home plate. Give your new sod a chance to knit, install your base anchors and plates, and you're ready to play ball.

Should a project be divided?

I've always tried to make the best use of my budget dollars. To do this, I felt I should separate every stage of the renovation.

I would have a contractor do the grading, but I would purchase the soil and amendments. I would have a different contractor lay the sod, but I would purchase the sod. I believed, and in some cases I still believe, that I got more for my money, because I saved the mark-up and overhead charges of the general contractor.

My purchasing guidelines also make it easier to get the job done in small bites rather than as a one-time continuous process. In the case of my baseball infield

renovation, the time I spent coordinating and purchasing was probably equal to what a general contractor would have charged to run the job. I did have an awfully good time though!

Each step of the process met my specifications. The result was a field that matched the one I'd planned, and there were no post-construction surprises.

The blizzard

Always strive to have the best field possible. One at a time, we can improve our facilities and provide better and safer sports turf areas. We can gain the professional recognition we as sports turf managers deserve.

A blizzard starts with one snowflake. If we each start with one field, together we can become that blizzard. □

Tim Moore is park & sports turf manager for Maryland National Capital Park & Planning Commission based at the Wheaton Maintenance Facility. He's president of the MAFMO Chapter of STMA, a National STMA board member, and chair of STMA's Awards and Scholarship Committee.



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STMA in Action

As spring continues to spread its warmth across North America, field use escalates. Though it's the busiest time of the year for many sports turf managers, it's also a very busy time for STMA chapters, as you can tell from the events listed below.

On-field demonstrations and hands-on training sessions offered at many of these spring chapter meetings provide one of the best opportunities for sports turf managers at all levels of experience to upgrade their skills. A mound building demonstration may be the first opportunity for a novice to learn the basic proce-

dures. The same demonstration may give a group of experienced groundskeepers the chance to discuss their own techniques and explain why they do specific processes a little differently to meet the needs of their own fields and the players who use them. Generally, every attendee picks up at least one idea to take home and put to use.

Chapter meetings held at field sites provide another great opportunity: the ability to get behind the scenes guided tours. These sessions tell it like it is, as Bill Murphy at Scottsdale Stadium and Grant Trenbeath at Bank One Ballpark so ably demonstrated during the Seminar on Wheels sessions at STMA's Annual Conference in Mesa.

These types of sessions showcase the fields as living proof of the field maintenance program presented. They also provide a forum for discussion of why specific procedures are done the way they are at that field, under the circumstances of use, time, climate, expectations, and budget.

So hats off and thank you to chapter meeting planners and coordinators, on-site hosts, speakers, presenters, trade

show and demonstration participants, and all the others behind the scenes who make these chapter events so successful. Because of sports turf managers who are willing to share their ideas and experiences, the entire industry takes a giant step forward.

Chapter news

Congratulations to STMA's four newly affiliated chapters:

Indiana Chapter
North Texas Chapter
Wisconsin Chapter
Tennessee Valley Chapter

Indiana Chapter: Chapter officers and committee chairs are planning the spring and summer meeting schedule. Events will be announced soon.

For information, contact Terry Updike, B & B Fertilizer: (219) 356-8424, or Pat Hickner: (800) 672-4273.

North Texas Chapter: The chapter is planning a field day/golf outing May 20 in Flower Mound, TX. More details will be announced soon.

For information, contact Rene Aspiron, Diamond Pro: (800) 228-2987;

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Grant Trenbeath hosts STMA Conference attendee's at Bank One Ballpark.

Courtesy: STMA

or Tom Welch, CSM, Central Garden and Pet: (800) 788-9581.

Wisconsin Chapter: Board members are as follows:

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- Gregg Knudson**
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- Chris Wendorf**
Olds Seed Company
- Tom Schwab**
O. J. Noer Facility
- John Stier**
University of Wisconsin-Madison
- Greg Freix**
Marathon County

The chapter will hold its spring meeting, a ballfield maintenance seminar with Floyd Perry, April 22 in Wausau. The chapter will also participate in the Wisconsin Turfgrass Association's summer field day at the O. J. Noer Facility August 10.

For information, contact Rich Riggs, R. H. Rettler & Associates, Inc.: (715) 341-2633.

Tennessee Valley Chapter: TVSTMA is planning a spring workshop.

Details will be available soon.

For information, contact Tom McAfee, Nashville Sounds: (615) 242-4371; or Bill Marbet, Southern Athletic Fields, Inc.: (931) 380-0023.

KAFMO Chapter: March 23, KAFMO/STMA is co-sponsoring the Northwestern Pennsylvania Athletic Field, Turf and Ornamental Conference in Meadville, PA. Contact Jeff Fowler for more information on this event: (814) 437-7607.

For general chapter information, contact Dan Douglas, Reading Phillies Baseball Club: (610) 375-8469, ext. 212.

MAFMO Chapter: The Mid-Atlantic Field Managers Organization will hold a two-day irrigation training and installation seminar March 24-25.

For information, contact the hotline: (410) 290-5652.

Michigan Chapter: A March MiSTMA meeting is in the works. An April seminar with Floyd Perry on baseball and softball field care is also in the planning process.

For information, contact Rick Jurries, West Ottawa Public Schools: (616) 395-2364.

Minnesota Chapter: The Minnesota



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