Laser grading is a term in the athletic field construction industry used to describe the process of moving soil with a grading mechanism equipped with an automated control. Laser guided controls can be mounted on any machinery including track hoes, trenchers, motor graders, bulldozers, tractors and infield groomers. In fact, anything with a motor and hydraulic supply can be mounted with an automated laser control system. The fundamental reason to use laser guided equipment is that it creates the most accurate and consistent grade and ultimately improves the drainage, usability, safety, and overall appearance of a sports field.

One of the biggest myths about laser grading is that some fields cannot be laser graded because of the elevations of land or fences that directly encase the field. This is usually untrue. A field can often be laser graded without moving the surrounding topography. In order to do this, you must do the following procedure.

First, grid the field on 40’ or 50’ centers, then shoot all grades and record on a scale drawing. (Note: most fields have some type of original blueprint so that scale drawings can be made very easily by tracing). After you have a drawing with grades shot, you can evaluate which way the water is going. After determining where the water can drain the most efficiently, you will then determine how much slope you will laser grade. One tenth of an inch in 10 linear feet is 1% of slope, so 1’ of fall in 100 linear feet equals 1% slope.

After compiling your information, you need to measure the length of slope to determine your slope %. For example, if you have 4’ of fall over 200 linear feet, you automatically know that is 2% of slope (4/200=0.02). Now you can determine if there are any problems between the points such as a big mound of soil which is holding the water back from draining or a big dip that is holding water. This process identifies problems and helps you determine how much to move the soil. The automated laser guarantees the 2 points (from high to low) will have continual slope with no holes or high spots to get through. The lowest point is your bench mark so you know you will get positive drainage.

Now that you have a plan, you need to make sure have the right type of equipment to complete the job. As completion of the field is near, you are going to install your irrigation (always tamp ditches and make contractor fix settling for up to a year, this is a safety issue and is a standard for professional contractors). After irrigation and soil amendments, you will need to prepare the soil for grassing by loosening the top soil. In short, a lot of the equipment you use needs to complement the laser grading.

An SFMANJ-sponsored tradeshow will be part of the program at the 2007 Rutgers Lawn, Landscape, and Sports Turf Research Field Day on Wednesday, August 1, 2007 at Adelphia.

Turfgrass education and New Jersey DEP Pesticide credits will be available to those attendees at the 2007 Rutgers Lawn, Landscape, and Sports Turf Research Field Day on Wednesday, August 1, 2007 at Adelphia.
Dr. Henry W. Indyk
Graduate Fellowship in Turfgrass Science

As many of you know, the University of Missouri is a host institution for the National Turfgrass Fellowship Program. This program is designed to prepare turfgrass professionals who will work in diverse settings and who will contribute to the science, teaching, and management of turfgrass systems. This fellowship is intended to prepare the next generation of turfgrass researchers and educators for leadership roles in the field of turfgrass science. The fellowship is available to individuals who have completed a master’s degree in turfgrass science or a related field and have completed coursework in turfgrass science at the graduate level. Fellows are expected to complete a research project and make a significant contribution to the field of turfgrass science.

To apply for the fellowship, a complete application package includes:

1. A letter of application detailing your interest in turfgrass science and your plans for your future career.
2. Transcripts for all undergraduate and graduate coursework.
3. Three letters of recommendation from professors or professionals in the field of turfgrass science.
4. A research proposal outlining your project and its significance to the field of turfgrass science.

The application deadline is September 15, 2023. For more information, please visit the University of Missouri’s website or contact the fellowship coordinator.

Sports Turf Quote:

“...I remember when I came here (St. Louis’ Busch Stadium) once in ‘94, the turf was scorching. We had to take our spikes off and put our feet on top of them to keep them from burning.”

- Pittsburgh Pitchers’ pitcher Rick White on the synthetic surface at Busch Stadium

(Pittsburgh Post-Gazette: July 25, 2005)
Renovation can be defined as turf improvement that involves partial or complete replanting without total tillage of the soil. Complete renovation is when the entire turf stand is killed and reseeded. Partial renovation is called for when only a portion of the total area is to be killed off. Renovation of a turf should be considered when the condition of the turf stand is: severely damaged by pests, predominately covered by weeds (broadleaf or grassy), of a poor quality, or a combination of these conditions exist.

Prior to taking any direct action the site needs to be evaluated to determine how severe and extensive the damage is and to identify the underlying cause of the damage. The evaluation should include identification of the dominate turf species and current density. All weed species should be identified (the weeds can be strong indicators of underlying problems). Additionally the thatch layer, drainage patterns and soil conditions should be checked. Soil should be tested for pH, nutrient levels and compaction. Soil should be tested for pH, nutrient levels and compaction. When the root cause of the decline in turf quality can be identified, a long term plan to alleviate the damage and prevent it from recurring should be developed and implemented.

Selecting an appropriate species for the site and use of the turf is the most important step in this process. On most athletic fields in New Jersey, the following species are desirable: Kentucky bluegrass, tall fescue, and perennial ryegrass. Kentucky bluegrass and tall fescue tend to be the more durable species; but when time is limited, perennial ryegrass is the fastest to germinate. For these species, the end of August into early September is the best time of year for establishment.

The area should be treated for weeds prior to seeding; preferably with an herbicide that will have short residual life such as glyphosate. Depending on the weeds present, more selective herbicides may used or applications limited to spot treatments. In this situation one needs to be very careful in the selection of an herbicide since the desirable seedlings will have an increased sensitivity to the chemicals remaining in the soil.

Soil compaction should be alleviated with aggressive hollow tine aeration - at least two to three passes over the area being treated. If thatch is a problem the field should also be dethatched at this time (the slicer can also help break up the cores from aerating if it is done second). This process will help expose the soil and allow for good seed to soil contact.

The last cut prior to over-seeding should be at reduced height to lower the canopy and allow more light to reach the soil for the germinating seeds. The seeding is best performed with a disc-type seeder to get the seeds directly in contact with the soil and through the canopy as opposed to a broadcast spreader that may leave the seeds exposed on the surface or in the canopy of the existing grass. The seeding rate will need to be higher than as compared to seeding over bare soil (by roughly 20 percent) due to increased competition from the standing turf. A thin layer of topdressing can be applied over the top of the seeds to aide in incorporating them into the soil.

The new seeds will need to be irrigated with frequent light applications until they have started to become established. Any fertilizer applications should be based on need as determined from the soil test.

When time is extremely limited one can either prime or pre-germinate the seed for a quicker establishment. Priming the seed is pre-imbibing it with water so when the seed comes in contact with the soil, it is ready to germinate. To do this, place the seed in a burlap bag than soak in a large container of lukewarm water (aerating with a fish tank bubbler helps but is not completely necessary) for about 24 hours than drain and air dry so it can be spread. Pre-germinating is taking this idea a step further; the seed can be placed on damp paper in a warm location (70-75°F) until roots can be seen emerging from the seed. With the pre-germinated seed the plants are already growing when they first contact the soil. The drawback to either of these ‘tricks’ is that the seed will be more susceptible to mechanical damage or fungi as you prepare it, so it is best to sow the seed/seedlings by hand (making this not practical for large areas) to minimize the physical damage.

Craig Tolley is Professor, County College of Morris; and President, SFMANJ

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July/August 2007
MY TURF WENT TO THE DOGS -
Here's the Scoop on Dog Parks

By Jeff Cramer, CPWM

As grounds managers, we often receive requests for special projects. When our township governing body requested we plan, construct and maintain a “dog park” (off-leash area for dogs) I realized there were many new challenges – not the least was care of the turf.

When I announced the project to my staff, most, if not all, were concerned with the impact of pet waste on staff and equipment. Shortly after the opening of the park we realized that the pet waste was the least of our maintenance problems. Long-term care of the park’s turf was our major battle.

Here are some suggestions you may want to consider before installing a dog park:

FACILITY DESIGN AND CONSTRUCTION

1. Visit other existing sites to determine impact on your maintenance program. Don’t reinvent the wheel if you don’t need to. You can see what is best for you by reviewing what works and doesn’t work for other dog parks. Our facility was a one-acre site.

2. Choose better quality fencing materials to provide a safe environment for dogs and to reduce maintenance. Use largest wire core and thickest fabric coating, install a bottom tension wire and use heavier grade posts and rails.

3. Install a double-gated user entrance where owners can unleash their pets.

4. Plan an equipment service gate of sufficient size for your turf equipment.

5. If a water source is available, install a freeze-proof hydrant convenient to the facility.

6. Do not plant trees or shrubs – they won’t survive!

7. Other things to consider: sitting benches, bulletin board, shade canopy, port-a-johns.

PET WASTE CONTROL

8. Post user rules and pet waste regulations at several locations.

9. Install several self-serve pet waste clean-up mitten dispensers with covered and lined waste cans along the inner perimeter.

10. Solicit park users to help enforce self clean-up by owners. This provided excellent results for our facility. Additional enforcement by park rangers if available. This includes pet license enforcement, control of aggressive animals, etc.

TURF MAINTENANCE

11. Locate the facility in a well-drained area.

12. Our facility consisted of primarily K-31 fescue – the tall fescues provide the best wear tolerance.

13. Soil compaction, both the four-legged and two-legged kind, was the biggest problem, not pet waste. Aerate several times per season to help maintain a viable turf.

14. Raise cutting height to 3” – 3 ½”.

15. Conduct soil tests to determine soil phosphorous (P), potassium (K), magnesium (Mg), calcium (Ca) and liming needs. Apply slow-release nitrogen (N) sources to provide 3-5 lbs Nitrogen per year.

16. Remove all sod at the entrance gate and replace with #10 cinders compacted over ¾” clean gravel – the turf will never survive here.

17. Use a nonselective herbicide containing glyphosate (e.g., Roundup) beneath the fence line. Keep the park closed during application until herbicide has dried.

For more information go to www.dogpark.com.

Jeff Cramer is a Certified Public Works Manager; Director of Public Works, Howell Township, NJ; and a member of the SFMANJ Board of Directors.

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Sports Field Managers Association of New Jersey

July/August 2007
Prior to the summer of 2006, I managed the irrigation on my sports fields simply by direct observation. I looked at the condition of the turf, and if it looked dry, I would set up a hose and sprinkler and let it run for a reasonable amount of time. Sometimes I would catch water in a can so that I could measure how much I was putting down. During periods of heat or drought, I would run around like a nut moving hoses and sprinklers to irrigate areas that appeared to be under stress. Many an evening, weekend, and holiday was spent attempting to keep my turf green.

Since then, two things have changed. First, I read an article in Sports Turf Magazine by Dr. Dave Minner (Iowa State University) suggesting that my method of irrigation was not efficient. The article went on to say that deeper and denser root systems and better stress tolerance were a result of heavier, less frequent irrigation. Second, at the 2006 STMA Conference in Orlando, I attended an Irrigation Audit Workshop held at the Disney World Wide of Sports Complex. From the workshop, I learned that the irrigation audit was a turf management tool that would help me grow healthier turf, conserve water, and save money. From actually doing it, I learned that it would also save time. My time!

An irrigation audit will help you discover how frequently and how long to irrigate. It is distributed over the soil. It will also tell you how the soil and soil can hold and the rate that water moves downward or percolates through the soil profile. You will even learn how the rate of evaporation and transpiration changes during different months.

One Saturday, last May, 2006, the weatherman predicted a warm, sunny day with no wind, a perfect day for an audit! If I got wet, I would not freeze, also no wind meant more precise measurements. I wanted to determine once and for all how much water I was putting down and how frequently I needed to irrigate.

An irrigation audit requires only some time and some very low tech tools (tape measure, catch-can devices, metric graduated cylinder, stopwatch, calculator, notebook and pencil). The audit can be performed with both in-ground and portable above-ground systems. The audit is sequential, meaning that each step provides information necessary for the next step.

The test requires data collection from the field as well as information found on the internet, books and even from the irrigation systems manufacturer. In the field, you will need to measure the test area where you will operate the sprinkler. This could be the irrigation zone for an in-ground system or it could be the area that a portable sprinkler would cover. Next, you place catch-can devices in an equally spaced pattern where you will collect the precipitation from the sprinkler. The catch-can devices can be bought or they can be like mine, simply a paper cup taped to stake to hold them upright. Just make sure that all of the catch cans are uniform. Run water through the irrigation system for a predetermined amount of time and measure and record the amount of water collected in each catch-can.

You will need to find out the volume of water coming out of your sprinklers in gallons per minute. This can be determined with a flow metering device, or manufacturer’s technical data for the system. This information will help you find gross and net precipitation.

Gross precipitation is the water that sprays out of the sprinkler nozzle.

\[
\text{Gross Precipitation Rate} = \frac{3 \text{ gallons per minute from sprinkler nozzle}}{\text{area being irrigated in square feet}}
\]

(0.3 is mathematical constant used as a multiplier)

Net precipitation is the amount of water collected in the catch cans. Find the area of the catch-can opening by measuring the diameter of the circle that is the opening (Area = \(\pi r^2\)).

\[
\text{Net Precipitation Rate} = \frac{(96.3 \times \text{average of all catch-can devices})}{\text{test run time in minutes} \times \left(\frac{1}{3.66}\right) \times \left(\frac{1}{16.5}\right)}
\]

(96.3 is mathematical constant used as a multiplier)

Net precipitation is compared with the gross precipitation to observe water loss as well as to measure the irrigation application efficiency.

Irrigation application efficiency = \(\frac{\text{gross precipitation rate}}{\text{net precipitation rate}}\).

After measuring the amount of water in each catch can, I was able to determine uniformity of distribution of the sprinklers. This will show how well the sprinklers distributed the water evenly over the test area.

For more information contact:

Don Savard, CSFM, CGM; Director, Athletic Facilities and Grounds, Salesianum School; and member of the SFMANJ Board of Directors.

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SFMANJ Field of the Year Contest 2007

Sports Field Managers Association of New Jersey is announcing its annual Field of the Year (FOY) contest.

ELIGIBILITY:
- Must be a current member of SFMANJ
- Must be the head groundkeeper at the facility
- Must be a natural grass field

CRITERIA:
- Award will be presented based on:
  - Quality of the playing surface
  - The facility
  - The maintenance program and what you did to improve the facility
  - The quality of your physical field

AWARDS:
- Winner will be honored with a plaque at New Jersey Turfgrass Conference at Trump Taj Mahal in December 2001 and will receive a trip to the BEAM Clay 2007, which will also include a tour of the grounds of the Trump Taj Mahal in Atlantic City and three days of education and trade show admission as part of the 2007 Expo East.

NOTE:
- Photos will not be returned and may be used on SFMANJ website and promotional settings.

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Synthetic Infill Field Maintenance Demonstration Field Day to be Held in South Jersey

Don Savard, CSFM, CGM

Sports Field Managers Association of New Jersey’s District 4 will present a Synthetic Infill Field Maintenance Demonstration Field Day field day at the Recconio Field Complex in Haddon Township, New Jersey on Wednesday, September 19, 2007.

Thinking of installing a new synthetic infill sports field system? Joel Taylor, Head Groundskeeper will host a tour of his facility and show how he found creative solutions to the unique problems of synthetic field care.

1. See for yourself how these field systems are cleaned, groomed and maintained.
2. Learn how to avoid costly mistakes when planning and building your field.
3. See a demonstration of synthetic field maintenance equipment.
4. Meet other grounds keepers who maintain synthetic fields and hear what they have to say.

THIS IS NOT AN INFOMERCIAL FOR A PARTICULAR BRAND OF SYNTHETIC INFILL SPORTS FIELD!

This field day is open to all sports field managers whether you have or are just thinking about getting into the new synthetic infill sports field systems. We especially welcome administrators, facility directors and decision makers to see first hand what synthetic field maintenance is all about.

Date: Wednesday, September 19, 2007
Time: 9:00 AM to 1:30 PM
Cost: $20 per person - LUNCH IS INCLUDED

For more information call the SFMANJ Chapter @ (908) 730-7770 or visit our website: www.sfmanj.org

Don Savard is a Certified Sports Field Manager (CSFM); Certified Grounds Manager (CGM); Director, Athletic Facilities and Grounds, Salesianum School; and a member of the SFMANJ Board of Directors.
Kickin’ the tires … or tines? SFMANJ-sponsored Field Days are a great opportunity to examine the latest equipment offerings from local distributors prior to making a purchasing decision.

Dr. Jim Murphy (holding soil plug), Rutgers University and SFMANJ Advisor, annually participates in Rutgers Turfgrass Research Field Days by delivering participates in Rutgers Turfgrass plug), Rutgers University and Dr. Jim Murphy (holding soil plug) at SFMANJ Field Day.

Inside This Issue

Welcome New & Renewed Members .................. 3
Membership Form ................................. 3
SFMANJ Board of Directors .................. 3
Synthetic Infill Field Maintenance Demonstration Field Day to be Held in South Jersey .................. 4
Sportsfield Irrigation Audits - Part 1 .......... 6
Turf Renovation .................................. 8
Calendar of Events ............................. 19
Fundamentals of Laser Grading .................. 11
2007 Proud Sponsors Directory ............... 12
My Turf Went to the Dogs ...................... 14
SFMANJ Field of the Year Contest 2007 ...... 16

For information regarding this newsletter, contact:
SFMANJ at (908) 730-7770 or Brad Park at (732) 932-9711, x127
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