FACILITY & OPERATIONS

sports field or insure safety from the start when building a new facility.

There are four steps that should be considered at the beginning of a net system design process. The first is a careful look at the site or the site layout plan to identify the likely problem areas and their orientation relative to the source of the hazard. The second is an evaluation of the structure that will be required to support the needed net panels. Third is a review of the cost and complexity of installing the nets and a decision as to whether they will be permanently hung or should be made to be easily removable. Lastly, thought should be given to how the installation will affect the esthetics of the facility. A net system may not improve the look of the place, but a poor design or sloppy installation can certainly detract from the appearance.

The first design step is a determination of what needs protecting and where the flight of the threatening ball is likely to originate. The problem may be a bank of windows on an adjacent building, cars driving along a nearby roadway, spectators sitting on bleachers, or pedestrians walking beside a practice field. For baseball and softball fields the origin is fixed, home plate, but the ball can go just about anywhere from there. Goal sports have an opposite situation in that a shot can come from almost any place on the field but, while wild shots do happen, most balls head toward the end of the field and the goal area.

When it comes to net protection location is everything. The closer the nets are to the point where the ball is hit, kicked, or thrown the smaller the panel needs to be to be effective. The best example of this is the small mobile backstop that is rolled into place at home plate for batting practice. The enclosure leaves only the side facing the pitcher open and any ball that is missed by the hitter or hit such that it would land outside the field of play strikes the netting and is trapped within the cage. This provides perfect protection but the cage would interfere with play and could not be used during a game.

Two alternatives for baseball and softball include the net canopy and the net extension added to a chain link backstop structure. A three-piece net canopy can be added to most existing backstops or included in the installation



Photo 2

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FACILITY & OPERATIONS

A DESIGN THAT ALLOWS A FEW PEOPLE TO DROP THE NETS FROM THE GROUND CAN PAY FOR ITSELF QUICKLY IF THE ALTERNATIVE IS HIRING A CREW AND A LIFT TRUCK EVERY TIME IT IS DONE.

plan for a new structure (photo #1). The use of netting rather than chain link reduces the cost of the enclosure and the lower weight puts less stress on the backstop structural members. The front edge of the middle net panel is supported by a cable run from pole-to-pole across the backstop at a location that will result in the best trade-off between protection and possible interference with playable balls. The triangular side panels complete the system and add significantly to the effectiveness of the backstop wing sections. Foul line netting can be attached to the poles used to support the cross cable and run down the line along a cable strung between additional poles or attached to a dugout or other structural point.

Netting can also be used to extend the height of a backstop to add protection without any possibility that the nets will interfere with play (photo #2). Cables run between extension poles support the net panels and vertical cables run down the outside poles secure the net side edge and keep it in place when the wind blows (photo #3).

Sometimes protection can't be located close enough to the action to protect a specific area. A good example of this is a playground located down the first base line of a field but within reach of a foul ball. In this situation it may be better to erect a net "roof" over the area to protect the kids who are playing than to try to build a backstop tall enough or wide enough to stop any foul ball (photo #4).

Once the location and size of a protective net system is determined, and the net panel layout and material are selected, the support structure can be specified. In our experience, the cost of the support components is often more than the cost of the netting to be supported. For this reason it makes sense to take advantage of structural attachment points that may already be part of the facility. Mounting cables can be run from backstop frame members, buildings, fence posts and some light poles. It may also be possible to minimize the supports needed by running a cable at a diagonal from the top of an existing pole to the top of a fence or dugout and then installing a triangular net panel rather than a rectangular net which would require additional pole supports.

Whatever support configuration you choose, the structure must be strong enough to stand-up to the possible wind-loads. Wind-load is determined by the size of the net panels, their height above ground, and the mesh size and yarn thickness. Small mesh netting (golf) and heavy yearns block more wind and increase wind-load. While all mesh netting for sports applications is mostly open, it is surprising how much load is transmitted to the cables and mounting structure under design wind load conditions (70-150 mph depending on location in the country). For example, a 100-foot run of baseball netting 30 feet high would require four support poles each made from 8-inch diameter steel pipe and each pipe buried at least 9 inches in the ground to resist the design wind-load of 90 mph in the upper Midwest.

Unlike chain link fencing, a safety net installation does not have to be permanent. In fact systems can be designed to be raised or lowered from the ground and the support poles can even be removed if ground sleeves where specified. There are a number of reasons to consider designing your system for ground based removal. Your application might be on a field that is used for more than one activity and netting that is important for one sport would interfere with another user. Exposure to the elements is also a factor in that the life of any polymer net will be extended if it can be taken down and stored during the offseason. A design that allows a few people to drop the nets from the



Photo 3

FACILITY & OPERATIONS

ground can pay for itself quickly if the alternative is hiring a crew and a lift truck every time it is done.

While the purpose of a net installation is protection there is no reason for it to be ugly. Net panels should be finished with clean borders rather than a ragged edge and each section should fit correctly and hang cleanly. Netting hung on-the-square looks better than diamondhung material and it is also easier for spectators to see through. Black netting is most often specified for outdoor applications because it is less noticeable and it provides a better backdrop for sports played with white balls. Nets can often be mounted without adding poles or other support elements but when these are necessary, making them compatible with the facility design is worth the effort.

A clear understanding of what needs to be protected and from what it needs protection is necessary before a proper design can be done for a protective net system. A proper design will provide the protection needed while minimizing the added cost for structural support, installation, and seasonal removal of the net panels. Good design should also consider the esthetics of the overall installation and how it affects the appearance of the facility.

Jim Myrland is president of Beacon Athletics, Middleton, WI, 800-747-5985.

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IRRIGATION & DRAINAGE

Irrigation systems: What's watering your fields?

e asked some of the top sports turf managers at 4year universities around the country what irrigation systems they employ at the different fields they are responsible for, as well as how they maintain them and schedule water use. Our panel included: Kevin Bevenour, campus grounds supervisor, Millersville (PA) University; Jason DePaepe, CSFM, athletic turfgrass manager, University of Colorado; Eric Kleypas, athletic turfgrass manager, Auburn University; Mike McDonald, CSFM, turf manager, University of Minnesota; Donnie Mefford, sports turf manager, University of Kentucky; and Jeff Salmond, CSFM, assistant director of facilities, Northwestern University.

What irrigation systems do you employ (including portable and installed irrigation systems) and on what fields, e.g., football, baseball, etc.?

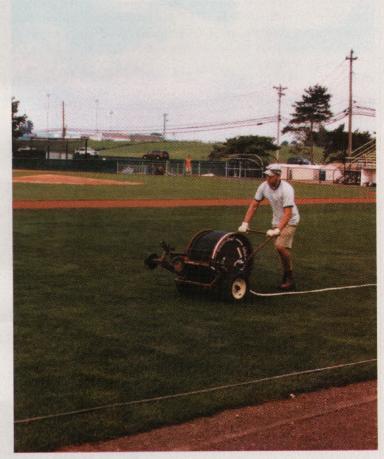
Kleypas: At Jordan Hare Stadium, we use six of the Nelson SR100 Big Guns to irrigate. The guns are located on the 50-yard lines and in the corner of each endzone. We use a Rainbird ESP controller and a Berkeley centrifugal pump to boost the water pressure to 100 psi.

The irrigation system at our women's soccer field has a combination of big guns and pop up heads. Four Nelson Big Guns are located down each sideline. We also have two rows of Rainbird Falcons running down the center of the field. The soccer field is a competition and practice field so with the added traffic, the pop-up heads allow us to irrigate the high traffic areas without watering the entire field.

The rest of our fields have the typical pop-up rotor systems equipped with Rainbird ESP controllers. In the past, we had Toro, Hunter, and Rainbird heads at our facilities. We are in the process of converting all fields to Rainbird systems. Any new facilities have Rainbird systems written into the specifications.

DePaepe: We have underground irrigation systems for our football, soccer, and track facilities. They are all permanent systems of pvc and permanent clocks. We use Toro Network 8000 for clocks and Hunter valves with heads 90% being I-40s.

Mefford: We have automated irrigation systems on all of our fields. On our baseball, softball, and soccer fields we use a basic block system set-up. On our football practice fields and at our football stadium we



use automated cannon systems. The cannon systems are unique because each cannon is wired to a valve that allows us to set times and water the fields in the evening and early morning hours while no one is around.

Also, since the cannons are placed on the perimeters of the field we don't have to worry about irrigation heads being a safety issue, and we don't worry with water breaks in the field of play. Moving the water cannons takes very little time and we have built pull carts for easy transport and storage.

IRRIGATION & DRAINAGE

Bevenour: We have an underground system on our sand-based, multi-purpose field. The field is used by men and women's soccer and women's lacrosse for both practice and matches, and for intramural flag football, soccer, and softball. We use a Kifco water reel and above ground portable piping on our women's field hockey field and another multi-purpose field (football and soccer practice and intramurals).

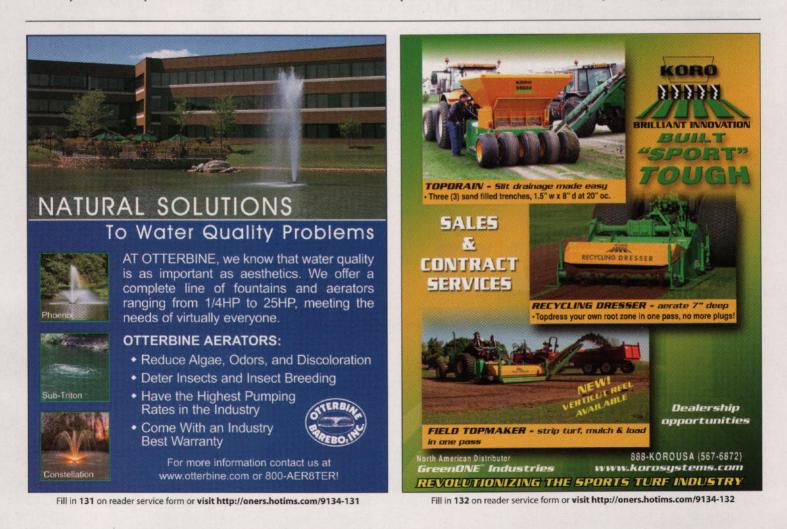
McDonald: We have mostly Toro product systems. Our baseball and track infield (both native soils) has Toro 640 heads for the main field areas, Irritrol CR 500 heads for grass in front of dugouts and behind homeplate, and Toro 570 heads in bullpens. Baseball has 14 360s, 4 four 238s, four 192s, 19 180s (skinned area included), two 90s, 13CR500s, 24 570s, 12 zones and five quick disconnects. Track infield has 10 360s, 14 180s, four 90s, five zones, and four quick disconnects, Richdel 214 & 216 valves, and Irritrol controllers at all sites.

Our softball field (native soil) and soccer fields (1 native soil, 1 sand field) has Toro 640 heads for the main field areas, Toro 700 heads in stadium areas, and Toro 570 heads in landscape areas with Irritrol 100 series valves. Softball heads include five 360s (one behind the mound area), three 192s, 14 180s, (skinned area included), 24 700s, 12 zones and three quick disconnects. Soccer, the two main fields have 63 360s, 18 180s, 12 zones, and three quick disconnects. Outside field/stadium areas we put out hand sprinklers. Salmond: All of our underground irrigation systems for baseball, softball, football practice field and soccer/lacrosse fields are ran by a Rainbird clock, with Toro valves and Toro 640 irrigation heads. On Ryan Field, we have a Toro LTC controller, with Toro valves and Toro 640 irrigation heads. We use a Kifco irrigation wheel with a booster pump to run over our Fieldturf field to keep the crumb rubber particles in place and for any rinsing and cleaning of the Fieldturf system. We use quick coupler valves located every 20 yards apart to water the sides of the field that the Kifco can't reach.

How do you inspect and maintain each system?

McDonald: We do visual inspections during a syringe cycle of our systems every other week depending on weather conditions. On the sand field during dry/hot conditions, we check weekly. We fix nozzles, gaskets and leaks as needed.

Kleypas: Maintenance is very simple. Having no pop-up heads on the playing surface dramatically reduces maintenance. It is comforting to watch a game without worrying about injuries associated with irrigation heads. With big guns, you never have to raise or lower heads to the existing soil level. We have pressure gauges located on each gun to check operating pressure. Depending on the time of day, the operating pressure will fluctuate between 90 to 110 psi. The only other maintenance



IRRIGATION & DRAINAGE

is to periodically check the radius of each gun to ensure that we are obtaining proper coverage. Using 1-inch nozzles, each gun averages around 280 GPM. This flow rate produces an application rate of 1.75 in/hr.

Salmond: Inspection is daily for leaks in irrigation heads in the field by any one of our grounds staff and during water use for proper irrigation head performance and coverage. Inspection of main lines and irrigation controllers is ongoing throughout the growing period from March until shut down in November.

DePaepe: Because of our arid climate, during the growing season we regularly go through each zone (at least once a month) to make sure all heads are working properly. We will check a problem area as soon as it arises, which doesn't take long to see in the dry air. We do on occasion have a problem with heads or zones and will hand water to get us

Kleypas: Water usage is based on the deep and infrequent theory, with the only exception being during overseeding. We try to grow a deep, dense root system. We check the bermudagrass for foot printing before turning on the irrigation. With all of our fields, we believe that monitored stress results in a stronger, more durable playing surface. By watering deep and infrequently, we strive to produce a field that will withstand the traffic applied throughout the football season.

We follow the same deep and infrequent program on all fields. Heads are periodically checked to make sure heads are level and running properly. Station run times are based on results from a simple distribution uniformity test A catchment test will show long to run the irrigation to obtain the desired amount of water.

DePaepe: Every afternoon, we determine what fields need water and how much based on the events we have scheduled, where we are

> the evapotranspiration rate for the current day, and the upcoming weather forecast.

Mefford: With bermudagrass fields, we like to keep all of our fields on the dry side. When we do water, we try to water heavy, especially on our sand-based systems (practice football fields and football stadium). We try to

in our fertility program,

through the day without letting dry spot take hold.

Mefford: In the spring when we bring our systems up, we visually inspect each system. We like to go through each zone and check individual heads for damage that may have occurred through the winter months. We try to service our water cannons during the winter months. For HAVING NO POP-UP HEADS ON THE PLAYING SURFACE DRAMATICALLY **REDUCES MAINTENANCE. IT IS** COMFORTING TO WATCH A GAME WITHOUT WORRYING ABOUT INJURIES ASSOCIATED WITH **IRRIGATION HEADS.**

safety purposes, we also like to check for heads that need to be lower or raised in the early spring. We like to use rain gauges in the spring to check the consistency of each system. We like to visually inspect each system at least once every couple of weeks throughout the growing season, and we daily monitor turf conditions that may show signs of system failure. We make most of our own repairs in house, but do contract out new installation projects and major repairs.

Bevenour: The Kifco and piping are inspected when put into use and transported from field to field. Visual inspection to make sure they are functioning properly when in use is the easiest way to catch any problems that need attention. In the winter, the Kifco is drained and pipe disconnected and the pump is filled with antifreeze.

Visual inspections are done on the underground system once a week to make sure the system is working properly. Heads, valves, and electrical components are adjusted or changed as needed. Other than waiting for a washout, the pipes are not checked for leaks.

How do you schedule water use?

Salmond: Water use is scheduled on evapotranspiration rates, weather patterns and rain and around all of our athletic events throughout the year.

follow the rule of deep and infrequent watering. We try to stay away from light watering except for times when we are establishing overseeded rye. This is really the only time that we water light.

The deep and infrequent rule has made a positive impact on root depth and turf strength. Our cannon systems on our football fields are great for this concept because they are able to put out a lot of water in a short period of time.

Bevenour: Water is scheduled by the type of field, time of year, maintenance schedules, field stresses, type of irrigation, and need. Our sand-based field, because of it's high use and demand for a quality surface, is irrigated with varying schedules from March through October, whereas the field hockey field is left to Mother Nature outside of the hockey season.

On a side note, irrigation systems have been dropped from four different field projects I have been involved with over the past nine years. The main reason for this is cost savings on the final price of the project.

McDonald: Water scheduling depends on upcoming forecasts, current conditions of the fields and on going maintenance practices. Some soil probing, but if the field starts turning gravish tint we water that night. We are looking into the new technology of the ET rate controllers for more consistent and effective watering.

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FIELD OF THE YEAR



North Scott, Netwal repeat as FOY winner

ohn Netwal, CGCS, and the high school sports complex of North Scott Community School District, Eldridge, IA, won the 2005 STMA Complex of the Year in

the High School/Parks category. Netwal also won the 2004 High School Soccer Field of the Year last year.

The North Scott community covers 220 square miles north of the Quad Cities metro area. All maintenance is handled by the district's grounds department, which consists of three full-time and two summer seasonal employees, who handle approximately 115 acres of school grounds and sports turf areas. The staff also handles many other duties for the district and are known as the "can-do" guys.

Netwal, director of operations, was a golf superintendent for 20 years before beginning to manage sports turf 5 years ago, and is a past president of the Iowa Sports Turf Managers Association. His full-time staff includes department head Andy Hamann, Terry Loesel, and Chris Thomas. The department is responsible for all grounds, playgrounds, parking lots, and fence maintenance, all outdoor facility improvements, as well as indoor deliveries and furniture moving.

"My primary responsibilities include the management of the district's entire physical plant and approximately 65 employees working in the custodial, transportation, and building maintenance services," says Netwal.

"My first job in the sports turf industry was working on a local golf course that just had been completed. I was hired along with every 13-year old at our high school to help pick rocks out of the recently constructed fairways during the grow-in phase of the project. The standard equipment issued every employee was a screwdriver and a metal bucket. The only time you could get up off our knees was when you had a full bucket to dump into the trailer for removal," Netwal says. "I was one of only a few to survive this chain gang and quickly had new opportunities to move up to other golf course maintenance tasks."

How well does he balance his family life with work demands? "Good thing you didn't ask my wife this question, as hard as I have tried, probably not as well as I should have," says Netwal. "I always tend to put the organization first and occasionally have sacrificed things more at home than I would like to admit. This isn't a simple thing to do in the golf course profession or in the sports field management industry. I hear it all the time from peers in both industries; everyone seems to be getting just a little busier than they have ever been. For those who have managed to find that perfect balance, I commend them; as for me, I continue to strive for a better balance."

How does he see his job changing in the next 10 years? "I believe that the sports turf





industry is going to change more in the next 10 years than my current responsibilities. I'm constantly hearing from many sports turf managers about the ever-increasing demands placed upon them for improved playing conditions and facility access," says Netwal.

"This pressure is leading to the development of many new sporting complexes throughout our area as well as a rededication of resources to improve existing complexes. These demands are going to provide sports turf managers with many new opportunities to grow and expand their work experience. When you hear people discussing the desire to install irrigation systems in youth sporting complexes, you begin to realize that people are beginning to raise the bar," he says. "As this bar goes up, so will the requirement for more training, experience, and skill for every sports turf manager in the industry. These changes will require tomorrow's sports turf manager to bring more management and educational experience to the position to go along with the art of sports field management."

FIELD OF THE YEAR

MAINTENANCE PROGRAM

North Scott Baseball Field

April

First seasonal mowing at 2 in. height 1x/week in off-season Fertilize with Country Club 18-5-9 at 4 lbs./m Gypsum at 10 lbs./m Dimension pre-emergence herbicide at 1.25 oz./m

May

Mow 2x/week at 1 1/2 in. in-season Fertilize with Country Club 8-2-24 at 4 lbs./m

June

Mow 2x/week at 1 1/2 in. in-season Fertilize with Country Club 18-5-9 at 4 lbs./m

July

Mow 2x/week at 1 1/2 in. in-season Fertilize with Country Club 18-5-9 at 4 lbs./m

August

Mow 2x/week at 1 1/2 in. in-season Fertilize with Country Club 18-5-9 at 4 lbs./m Overseed with 2 lbs./m of United Seeds' low growth Sure-Shot bluegrass blend Gypsum at 10 lbs./m Aerify 5/8-in. tines

September

Mow 1x/week at 2 in. during off-season Fertilize with Country Club 8-4-24 at 4 lbs./m

October

Mow 1x/week at 2 in. during off-season Fertilize with Country Club 18-5-9 at 4 lbs./m

November

Mow 1x/week at 2 in. until top growth stops

Fertilize with Country Club 18-5-9 at 4 lbs./m

Triplex herbicide at 1.25 oz./m (three rotation)

Aerify 5/8-in. tines if season permits

STMA In Action Call for Board, Founders Award nominations

he Nominating Committee is accepting nominations for the STMA Board of Directors. If you are interested in being considered for national board leadership, or wish to nominate a member, please provide the person's name, contact information, and a brief biography to STMA, 805 New Hampshire, Ste. E, Lawrence, KS 66044, Fax (800) 366-0391, or by email to STMAinfo@sportsturfmanager.org by July 7.

STMA recognizes its four founders by giving an award in each founder's name. These prestigious awards are STMA's highest honor; the awards have different criteria (see below). If you would like to nominate a deserving person, please return this form to STMA by October 16.

Dick Ericson

Awarded to someone who plans and executes the sports turf management of their facility, who effectively leads their team to accomplish their goals in field maintenance, and who positively impacts the sports turf industry. Criteria: At least 5 years of service in a sports field-related position; member of STMA; job performance and work ethic that consistently meets or exceeds expectations; management techniques that make the most of existing resources; efficient and effective personnel management; constantly improves the management program, introducing creative and innovative ideas; receptive to ideas and creative skills of others; industry professionals; supportive of and works to increase professionalism within the sports turf industry.

Dr. William H. Daniel

This award recognizes an individual who has made significant contributions to the sports turf industry through his or her research, teaching or extension outreach. Their influence may be highly visible or behindthe-scenes. Criteria: Member of STMA; conducted research or developed or executed teaching/extension programs relevant to the sports turf industry; research, teaching/extension programs enhanced the understanding of the sports turf industry; research has practical implications; teaching/extension provide technical background and/or practical training; research was published in a professional journal; teaching programs channel outstanding individuals to the sports turf industry.

George Toma

The George Toma Golden Rake Awards acknowledges the superior performance of a sports turf crewmember in "on the job" activities and in community service. Criteria: Member of STMA; at least 2 years of service in a sports field-related position; job performance that consistently meets or exceeds expectations; work ethic that consistently meets or exceeds expectations; offers professional ideas and brings creative skills to the department; assists in additional non-job related sports events and activities for the community; is a true believer in the "and then some" tradition of grounds maintenance.

Harry C. Gill

The Harry C. Gill Memorial Award was established to honor an individual for their hard work in the sports turf industry and to acknowledge their dedication to STMA. Criteria: Member of STMA; dedication for developing and maintaining quality sports turf areas; outstanding ability and commitment to the sports turf industry; professional involvement and service to the STMA on a local, regional and national level; professional leadership in promoting STMA, its members and the sports turf industry; contribution of written communications in articles, magazines, manuals, legislation and/or research.

FOUNDERS AWARD NOMINATION FORM

Please fill out the following form and submit it to STMA Headquarters, 805 New Hampshire, Ste. E, Lawrence, KS 66044, FAX 800-366-0391 by October 16.

Select the applicable Founders Award:

- __ Dick Ericson
- Dr. William H. Daniel
- _ George Toma
- ____ Harry C. Gill

Nominee's Name		
Facility		NICE ST
Address	and the second	
City	State	_ Zip Code
Work phone		
Supervisor's Name		
Supervisor s rame		
Supervisor s rvanie		The No
Your Name		
Your Name Facility		
Your Name Facility Address	State	_Zip Code

How do you know the Nominee?_

Describe how the Nominee meets or exceeds the specific award's criteria. Give examples. (You may prefer to provide this information on a separate sheet)

Thank you for your submittal. Return via mail or fax by October 16.