



More than 85,000 fans scream "War Eagle!" unaware of all the hard work involved in maintaining the field at Jordan-Hare Stadium. The field is irrigated with six Nelson one-inch water cannons. Photo courtesy: Auburn University.

By Robert Reaves

In recent years college and pro teams have been using natural-turf fields as an important recruiting tool. However, 20 years ago, the sports industry was making a significant switch from grass to synthetic-turf playing fields. Some recruits wouldn't even talk to a school or team unless they played on AstroTurf™. Synthetic playing fields were promoted as low maintenance and even considered a status symbol. But as injuries escalated and the turfs color began to fade, many athletic directors started to rethink their philosophy on natural turfgrass.

If you are planning to install natural turf or upgrade your irrigation system, it's always a good idea to get advice from manufacturers, contractors and athletic directors. Even though every sports field offers unique challenges, the basics in irrigation planning remain the same.

After the decision has been made to convert to natural turf, you'll need to determine what type of irrigation system to install. Georgia Tech University's Bobby Dodd Stadium is returning to turfgrass and has hired McGovern Construction Corp. of Fort Myers, FL, to

do the installation. The project requires the removal of the synthetic turf, selective demolition, installation of a USGA-specified rootzone mix, construction of a new drainage system and installation of an automated irrigation system.

Butch McGovern, president of McGovern Construction, says, "There are several important considerations when initiating a new irrigation installation program. First, make sure you have selected the irrigation type that meets your needs. Second, choose a contractor that has good experience in athletic



**The Nelson "Big Gun" is popular because it limits injury, requires lower capital investment and provides satisfactory performance. Photo courtesy: Nelson Irrigation Corp.**

field installations. Third, budget enough money to complete the project."

Many teams believe that the liability risks of tripping over sprinkler heads are too great with in-ground systems and that any additional labor required to manually move the irrigation equipment is offset by the reduced exposure to injuries and lawsuits. Others believe in-ground systems offer the technical approach to irrigation. Both systems work well, but the choice depends on your needs.

### Cannon-Gun vs. In-Ground

Jordan-Hare Stadium at Auburn University, Auburn, AL, holds over 85,000 spectators. Auburn's irrigation system is the above-ground big cannon. According to information supplied by the university, a 20-hp pump supplies water through a three-inch line encircling the field that feeds six Nelson one-inch water cannons. The water cannons put out 330 gallons of water per minute at 120 pounds of pressure at the heads. The placement of the cannons ensures proper coverage of the field with an extra amount of water going to the most-used areas of the field. Jordan-Hare Stadium is watered three times a week with about a half inch of water being applied at each watering. A crew of seven does all the maintenance on the stadium field, three practice fields, baseball diamond, soccer field, track, band field and tennis courts.

According to McGovern, the University of North Carolina and University of Tennessee also use the "big guns." The University of Arkansas is also planning to use this irrigation type. "Because of the tremendous distance of throw of big gun sprinklers, the field can be covered from the sides of the field, keeping irrigation equipment off the playing field," says Mike Monahans from Nelson Irrigation in Walla Walla, WA.

Quick-coupling valves are located in underground valve boxes off the playing field. Semiautomatic systems are also available.

Another choice for athletic field irrigation is the in-ground system. Many professional teams and colleges choose an in-ground system because they believe it provides greater uniformity in precipitation. A pro team with long-term ownership prospects is more likely to make the larger capital investment for an in-ground system, as they definitely want the "manicured" look.

Mike Staley, national specification manager for Weather-matic in Dallas, TX, says, "There are several pieces of advice I'd give when installing in-ground sprinkler systems to athletic fields. It's imperative to use rubber covers over the sprinkler heads and install check valves to prevent low-head drainage problems." He recommends a design to allow for pressurized (main) lines to remain outside the playing field. Staley suggests use of a master valve to prevent excessive damage from mainline break or stuck zone valve. "There's nothing worse than having a sprinkler head running all night," says Staley.

Likewise, Todd Mohr, area specifications manager for Rain Bird in Glendora, CA, has some tips for those planning installations. Mohr says, "Sports turf managers need to choose a manufacturer that will service the equipment. They should select equipment that is easy to maintain and adjust, as well as good availability of replacement parts." Mohr also stresses the necessity of checking references on manufacturers to make sure they live up to their promises.

### Manufacturer Considerations

Several companies manufacture in-ground sprinkler systems for athletic fields. All systems are similar in design, but each manufacturer offers features that may be distinctive or unique. Network with other athletic field managers and ask how their irrigation equipment is performing. By doing so, you'll soon discover which irrigation systems have proven track records.

Owen Field at the University of Oklahoma now has a new natural turf playing surface. Don Hatcher, athletic maintenance supervisor at the university, says, "Owen Field is a sand-based field that we never let dry out. We water infrequently but deeply using Toro 640 sprinkler heads that we usually run for one hour per station." They use booster pumps where additional water is needed. To check for uniformity of application, Hatcher places 25 to 30 rain gauges on the field.

The three most common heads for large athletic fields are impact rotary, gear-drive rotary and cam-drive rotary. The impact rotary retracts into a can placed in the field. However, the cover

of the can must be absolutely flush with the soil surface. If the sprinkler is slightly cocked to one side or too high, athletes may trip over it.

Parts are easy to replace with impact heads. A washer or spring can be replaced without exchanging the rest of the components. Impact heads have been in use many years and have a proven track record.

Gear-driven rotary sprinklers have two important selling points. They can be installed below grade, and the surface area of the top of the sprinkler when retracted is smaller than the impact sprinkler. When installed properly, the head of the gear-drive should be one-half inch below the surface. Neither an athlete's shoe nor wheels of maintenance equipment should make contact with the head.

A very important characteristic of gear-drive heads is the smooth rotation of the head provided by the gears. This means better uniformity than impact-rotary sprinkler systems.

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# How To Spot A Well-Dressed Field.



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## Irrigation

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One key selling feature of the in-ground system is uniformity of application. Because of its uniformity, fertigation works especially well with an in-ground system. Still, attention to efficiency/uniformity is essential. With 80-percent efficiency, it's possible to see a two-to-one coverage ratio from the spot getting the least amount of water to the spot getting the most. Accept an efficiency rating of nothing less than 70 percent.

Another virtue of in-ground systems is adaptation to chemigation. Chemigation is the application of fertilizers, herbicides, insecticides and fungicides through the irrigation system. By using chemigation, labor costs and water-use efficiency are improved. Light and consistent applications of nitrogen throughout the growing season lower the risk of "turf torch" from mechanical applications of fertilizer.

"An in-ground system offers ease in fine-tuning the water distribution with a small adjustment at the top of the sprinkler head while the water is running," says Andy Wright. Wright is president of Muellermist Irrigation in Broadview, IL, the irrigation contractor at the new Comiskey Park in Chicago. Comiskey Park uses Hunter I-40 sprinklers. More than 50 sprinklers are installed on the infield, outfield, bullpens and along the baseline from home to first and third bases. Because this system is so easy to adjust, it is a real time-saver for the maintenance crew.

Manufacturers of in-ground systems for athletic fields reinforce the safety of their products. With rubber covers and below-ground pop-up features, the sprinkler heads remain well below the grass playing surface.

Staley believes the following should be components of in-ground systems:

- 1) sprinklers with high CU/CDU ratings for even distribution;
- 2) rubber covers on sprinklers to reduce injury potential;
- 3) check valves on sprinklers to prevent puddling from low-head drainage;
- 4) quality electric valves to minimize potential for valves sticking open;
- 5) controller with multiple programs

- for test and syringe cycles;
- 6) event- or time-block feature to prevent watering on the day of an event or game; and
- 7) radio-control maintenance.

For controllers, the most important attribute should be ease of operation. Some controllers are capable of monitoring or being overridden by remote sensors. Moisture sensors, rain gauges, pressure switches and vandal sensors are all possible with today's central controllers. Imagine the surprise of trespassers when the sprinklers, flood lights or a siren suddenly turn on!

Not only does proper drainage protect the turf from excessive surface water, it also aids in protection of high water tables and unwelcome salt from subsurface water. The drainage needs of an athletic field are unique. Control over water in the rootzone is essential to turf recovery from traffic abuse. It is the responsibility of the athletic-facilities manager to keep the field playable.

The two water sources involved in the drainage process are surface and subsurface water. Surface water is the most obvious and can be controlled by applying only the amount of water the turf actually needs. Controllers can be adjusted to reflect weather conditions.

Soil types also impact surface water and runoff. The football practice fields at the University of Oklahoma have a clay soil and are irrigated at short intervals, just to the point of runoff. After the water soaks in, irrigation is continued. This increases water-use efficiency.

Auburn University uses two-inch fabric polyester pipes, one foot deep, spaced five feet apart across the football field. Sand-filled slits 3/4-inch wide and seven inches apart run lengthwise across the field. The pipes run into four-inch PVC lines at the sidelines. High-density polyethylene pipes would be a better choice in colder climates, as they offer better resistance to freeze damage.

Subsurface water is also a problem. Dr. James Beard from Texas A&M University warns, "The presence of water table within six feet of the surface indicates the need for improved subsurface drainage." He adds that a high water table interferes with removal of excess water from beneath the rootzone.

A large network of drainpipe

prevents subsurface water from saturating the soil above — in addition to removing excess water from the surface. The drainpipe artificially lowers the water table. Those installing drainage systems are encouraged to speak with professional contractors and other athletic-field supervisors with similar soil/water tables.

## Filtration and Drainage

A great deal of expensive labor goes into cleaning sprinklers, regardless of the type of sprinkler used. Much of this labor could be utilized more efficiently by using the correct filtration equipment.

Sand is usually the biggest problem in any turf irrigation system; however, other impurities include algae, silt, organic matter and solids. The three common filters used are spin filters, media filters and hydrocyclone. The amount and type of impurities will determine the filter or combination of filters necessary to keep your sprinkler system working properly.

A good drainage system is absolutely essential to any irrigation system.

It also requires maintenance, just like a sprinkler system. The Toro Co. recommends that where systems must be winterized to prevent freeze damage, an air-hose connection of approved design will be required at the location or locations noted on the plans. The entire system can be drained by blowing out with compressed air, not to exceed 70 psi. Toro also suggests the use of automatic drain valves to drain lateral lines, their locations determined by elevation changes shown on the drawing plans.

Probably the most important parts of irrigation installation are planning and assessment of your needs. Budget a liberal amount of money for the irrigation project; otherwise, you could run into a shortfall. Don't be hesitant to ask for advice from your peers in the sports turf industry as well as manufacturers. □

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