

CHALKBOARD

TIPS FROM THE PROS

ADVANCES IN ATHLETIC FIELD IRRIGATION DESIGN

Safety is the most important consideration in athletic field irrigation design today. Manufacturers, designers, and contractors all want to avoid the possibility of litigation in the event of an injury. But they also have a responsibility to provide irrigation systems that are efficient, reliable, and reasonably maintainable.

The safety debate is not just about sprinkler heads being located on a field. It extends to conditions caused by improper zoning, lack of control, poor spacing, and installation. Add water conservation to these concerns and you can see the justification for the following trends in athletic field irrigation design.

Sprinkler heads aren't allowed on the playing surface of European soccer stadiums, points out Robert Symonds, director of international marketing for Toro Irrigation. Stadiums must therefore use "big guns" on the sidelines and supplement with travelling sprinklers for the center of the field.

This runs against what U.S. irrigation manufacturers are finding as the best way to provide a safe sports surface. "Sports turf managers need the ability to apply water according to wear," says Symonds. "To do this, they need either individual head control or zones arranged to fit areas of similar wear. You don't want to irrigate the goal mouths of a soccer field or between the hashmarks on a football field the same way you do other areas. They don't have the same wear and are likely to have different infiltration rates and water needs."

"The best way to prevent injuries is to keep grass thriving," claims Kirk Thompson of Buckner. "In the past, designers have placed too much attention on precipitation rate. You can't assign one precipitation rate for an entire field and build a system around it. Instead, you need to address the water requirements of each unique part of a field to maintain an adequate amount of soil moisture and acceptable salinity level during the peak growing season. By balancing spacing, pressure, and flow rate for each part of a field, and backing it up with proper controls, the designer provides the best growing conditions for sports turf."

For these reasons, heads must be located on the playing surface. To counter concerns over safety, manufacturers have developed heads with a smaller exposed surface. Examples include the Hunter I-40, the Toro 640, and the Rain Bird R-70. By installing these heads with a rubber cover and flush with the surface, very little of the



sprinkler is exposed. Hunter also offers a sod cap for its I-40 to cover it completely.

"Too much attention is paid to the size of heads," counters Thompson. "Smaller doesn't necessarily mean safer. Tests have shown that a large, rubber-covered sprinkler displaces an impact better than smaller heads. The issue should be how the sprinkler performs, how reliable it is, and how easy it is to maintain. Impact or cam-drive heads may have a larger exposed surface, but they also have a strong record of reliability and uniformity of application."

To achieve more control over irrigation, many sports complexes are installing valve-in-head sprinklers, explains Sally Prusia of Rain Bird. These can be operated individually or in small groups. Pressure-regulating valves on each head provide a constant pressure not available with battery systems.

"The goal today of irrigation is to apply the minimum amount of water to a defined area at the correct intervals for optimum turfgrass growth and safety of use," she summarizes. "Valve-in-head sprinklers run by solid state controllers with water-saving features give precise control."

The norm used to be zones of five or six heads operating at long distances and high pressures. Today, the number of heads per zone is decreasing as well as the operating pressure, says Thompson. "We are now seeing more systems designed with heads operating at 55 to 60 psi with tighter triangular spacing ranging from 50 to 60 feet. More attention is being paid to spray trajectory, droplet size, and overlap. We are using more part-circle heads on sidelines and near skinned areas of baseball fields. It all adds up to greater control and better turf."

"There aren't enough irrigation designers specializing in athletic fields," states Lynda Minchin of Hunter Industries. "Many stadiums and parks have fields which are used for many different sports. Different field configurations have different irrigation needs. Designing a system with enough

flexibility for these facilities takes a professional who understands their needs."

One trend is the increasing flexibility of heads by offering interchangeable nozzles or adjustments for spray arc, radius, and flow. Changes can be made in the field to allow one head to operate in a variety of ways.

Minchin points out that vandalism is often the cause of a malfunctioning head. By enclosing the working parts in a case they are out of reach of vandals. She says that closed-case rotors can be repaired by changing the sprinkler core. This eliminates the need for stocking a wide assortment of repair parts or employing someone with the skill to make repairs in the field in case of unexpected breakdowns.

Other items can help protect heads in the field. Swing joints allow the head to move when hit by players or maintenance equipment. Check valves stop low head drainage and eliminate soft spots near heads. Contamination-proof valves and filtration systems allow sports complexes to use non-potable or reclaimed water without damage to heads.

Flexibility is also an important feature of solid-state controllers. Cycle repeat, water budgeting, moisture sensor overrides, and more precise station programming allow sports turf managers to customize irrigation schedules. Large systems with central computers can also receive feedback from components in the field to alert the manager of malfunctions. The ultimate so far is utilizing feedback from weather stations and pump stations to reduce water and energy consumption.

"The bottom line is safe, durable turf," says Minchin. "That demands greater control and flexibility from irrigation systems. It's important for sports turf managers to stay on top of advancements in irrigation technology. A lot has changed in the past ten years that they need to know about to provide their facility with the safest possible turf."