

Safe sports fields built through understanding irrigation's best practices

A safe, pristine sports field can only be developed by implementing an irrigation system that consists of high quality components that are designed with sports fields in mind. In order to determine the right irrigation products for a particular field, the Turf Manager has to focus on a few key points including player safety, aesthetics, and cost.

Finding the right combination of components can only be accomplished by thoroughly understanding efficient irrigation practices. One of the most important factors the manager must consider is how the field is used and how often. The manager must also need to have a firm grasp on basic irrigation hydraulics, plant/soil/water relationships, and irrigation terminology. Not only does the manager need to be personally educated, they need to keep their entire staff educated as well. The basic steps that need to be considered for either a new or renovated field are the same for any field across the country, and are imperative to field success.

DESIGN

The design of an irrigation system is the "roadmap" for the contractor who is installing the system. There are professional irrigation designers who specialize in this process and understand the hydraulics required for an efficient system. It is generally best to contract one of these seasoned professionals, especially for a new build. They can identify many of the technical specifics involved with planning such as the point of connection, water supply, elevation changes, available water pressure, and so on. These items must be reviewed before a design can take place. The project also needs to meet local codes for backflow devices, meters, and electrical configurations. Most importantly, a professional designer can match the right irrigation and maintenance equipment needed for a specific site.

AUTOMATIC VALVES

The "heart" of an irrigation system consists of the electric or battery operated

valves, which can be arranged into various configurations depending on water pressure and zone sizes. Valve size is important, especially for larger zones of sprinklers. Generally 1.5 or 2-inch valves are used. The valve needs to have slow closure to ensure no "water hammering" takes place. Pressure regulation devices are often installed on the valve to optimize the sprinkler's dynamic, working pressure. Captive parts are imperative when someone might need to work on the valve after installation. Quick coupler valves offer easy access to pressurized water in isolated areas. The more quick couplers that are included in the design, the better. They are usually installed on the mainline, which makes it easy to hit hot spots quickly and effectively.

AUTOMATIC CONTROLLER

The irrigation controller is the "brain" of the system, as its scheduled run times are what activate and deactivate field watering. Versatile scheduling capabilities within the controller allow the manager to implement a customized set of run-times that provide the ideal amount of water to each zone of the system. To ensure irrigation doesn't occur in conjunction with natural precipitation, most professional-grade controllers are equipped with rain sensors that temporarily cancel irrigation. There are also "solar sensors" that track daily weather patterns and automatically adjust runtimes to the optimal irrigation level. These sensors not only save the health of the field, they save water and money as well. Flow sensors are another add-on device designed to save water and protect landscape health. In the event of a pipe or component breakage, a flow sensor will not allow the zone to receive irrigation.

With many system designs, more than one zone will often need to operate at the same time, so it is important to select a controller that features multiple programs and run-times.

ROTORS

There are a few key features that should be considered when selecting the rotors that will be irrigating the field. The rotors must have a small exposed diameter on top and an attached rubber cover to ensure player safety. A strong spring within the sprinkler will provide positive retraction and ensure that sprinkler caps do not stick up above the grade level of the field. Manufacturers spend a tremendous amount of time creating nozzles that provide an even distribution of water over the turf area. Without these features and specialized nozzles in the rotors, brown "doughnuts" can occur, which looks bad and can become a player safety issue. An increasingly large number of managers are also responsible for synthetic turf surfaces these days, which need

NETWORKING

There are many knowledgeable people in the irrigation industry that can assist with the education and consulting of an irrigation system. The following links offer different educational opportunities and networking for someone who might not be aware of basic irrigation needs:

www.stma.org (STMA)

<http://www.dpla.water.ca.gov/urban/conservation/landscape/wucols/index.html> (WUCOLS)

www.irrigation.org (Irrigation Association)

<http://www.atinet.org/cati/cit/> (Center for Irrigation Technology, Fresno)

<http://www.asic.org> (American Society of Irrigation Consultants)

<http://www.landcarenetwork.org/> (PLANET - Professional Landcare Network)

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irrigation for cleaning and cooling. There are new rotors on the market that can provide the radius and flow required to do these jobs. Care needs to be taken in the initial design to ensure there is enough water and pressure available.

EFFICIENT INSTALLATION

After the design has been created and the products have been selected, the field manager needs to do his or her homework to find a professional contractor. When searching for a contractor, be sure to ask for references, referrals, and their certifications. When it comes to installation, it is of the utmost importance to ensure that

the installers closely follow the installation specifications provided by the manufacturers. Additionally, sprinklers should not be buried too low, operating pressure should not be too high, and the valve box should be filled with gravel and wired with the correct waterproof wire connectors. Make sure to have the contractor provide an “as built” design (how it was actually installed/ built), and put a copy of this in the controller cabinet for maintenance of the system. This can come in tremendously handy, as site observations are cheap insurance policies during the installation process.

EFFICIENT MAINTENANCE/ MANAGEMENT

After the design and installation has taken place, the final step to an efficient, safe playing field is in the hands of the manager. This person needs to understand what the products do and how to troubleshoot all of them, if required. Also, understanding the specific site is very valuable when it comes to the water sup-

ply, quality and available pressure. Many turf managers have taken classes on plant/soil/water relationships, and this knowledge is imperative when it comes to scheduling the amount of water the turf-grass needs and how quickly it might infiltrate through the different soil types. Education is probably the most important issue when it comes to maintenance and management. Basic irrigation classes on hydraulics, precipitation rates, distribution uniformity, and electricity are just a few topics that are offered by various associations both nationally and locally.

It's imperative that all sports field managers become members of STMA, Sports Turf Managers Association and then complete their certification. By becoming a CSFM (Certified Sports Field Manager), they add a professional endorsement to their resume and location of employment. ■

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Water and synthetic turf

JUST ADD WATER.

Sounds easy, doesn't it? In fact, it almost sounds like a no-brainer. In reality, caring for a sports field is far from simple. In this case, one doesn't 'just' add water. Irrigation requirements for natural grass are completely different from those for synthetic turf. They serve a different purpose, use a different schedule, and vary widely, depending on a variety of factors. We'll discuss the requirements for natural fields another time, and for now, turn our discussion to synthetic turf fields.

Synthetic turf fields that are kept up with regular irrigation (typically referred to as a cooling system) show multiple benefits, including:

- Settling the infill (and keeping it there)
- Controlling static electricity
- Increasing the consistency of ball roll and bounce
- Reducing the temperature on the field

We also know athletes like fields watered prior to play, since particularly in the warm months, it makes for a cooler, firmer surface.

Make no mistake, though: A cooling system is not required in a synthetic field, just as mowing is not. However, it can, and does, increase the playability of the surface. How often to water, and how much, will depend on various factors, including the weather, the amount and type of use the field gets, and the type of drainage system—as well as how well the drainage system works.

Typically, most synthetic turf infill fields are designed to drain vertically through the system to get water off the field. Drainage, however, is a sticking point for many owners. Because drainage systems can be a significant expense, and because, from a spectator perspective, they are invisible, they are an area

where cutbacks often occur in the budgeting process. And let's face it: it's easier to cut back in an area where you can't see, and to try to redistribute funding to a higher-visibility flashier option, such as a press box or electronic scoreboard, logos or graphics for the field, or other enhancements to the field's aesthetic value.

Owners need to keep in mind, however, that a well-designed drainage system is vital to the longevity and performance of the field. Conversely, a field that does not drain well will not be playable, and will not be a valuable asset, no matter how good it looks when it is dry.

Note: Most turf fields being built today have integrated irrigation and drainage systems. In older installations, where irrigation has not been built in, field builders often suggest that facilities be retrofitted with water cannons. It is suggested that six cannons in all be placed at midfield and at the 30-yard line on each side.

ON-FIELD DRAINAGE

There are different choices of drainage systems, with multiple options on the market. All have their advantages and disadvantages, as well as cost differentials to be considered. The choice of which system to use is ultimately that of the owner, who should make the decision in consultation with industry professionals. All sites are different, and while there is no 'right' answer across the board, there is always a right answer for a particular situation. An owner should talk with industry professionals, as well as with colleagues in the area who have comparable climate and facilities, as well as similar amounts of activity. There is no such thing as too much information, in this case.

The purpose of a good irrigation system is

to water the field. Perhaps that sounds self-explanatory, but consider this: water should be going only on the field. The system should not overspray and hit the encircling track, benches, spectator stands or other areas. And ideally, the field should be constructed so that the only water the in-field drainage system needs to handle is that which falls onto the field from the sky, or onto the field from the irrigation system. The field should not be getting wet from runoff from the bleachers or from surrounding hillsides or other areas. Proper sloping of such facilities to direct water, correct placement of perimeter drains (and regular care of these drains, such as keeping them free of sediment and debris) can, and should keep problems to a minimum.

Assuming these types of issues (with the exception of maintenance) have been addressed in the design phase of the project, the drainage system beneath the surface of the field should be adequate to move a normal amount of rain or water from irrigation off the surface and keep it playable.

The owner or manager, however, should be proactive in making sure the system is functioning correctly. Builders often recommend watching the field during a rain to see if water collects in any spots, whether there is any subsurface bubbling to indicate a lack of drainage, or whether water seems to be percolating through. Problems should be noted in detail and reported to the contractor who installed the field, or to a field specialist who has worked with similar facilities. Some problems may be easily addressed by a professional, while some take more extensive work. Often, it is impossible for the owner or manager of the field to make that call.

Which leads to the final point, say the pros: if a problem is suspected, make the call for service immediately. An irrigation and/or drainage problem is not likely to fix itself, and if anything, is made worse (and possibly more extensive and expensive) by waiting.

Note: The American Sports Builders Association (ASBA) is a non-profit association helping designers, builders, owners, operators and users understand quality sports facility construction. The ASBA sponsors informative meetings and publishes newsletters, books and technical construction guidelines for athletic facilities including sports fields. It also offers voluntary certification programs in sports facility construction and maintenance, including sports fields. Available at no charge is a listing of all publications offered by the Association, as well as the ASBA's Membership Directory. Info: 866-501-ASBA (2722) or www.sportsbuilders.org. ■