BEATING THE HIGH COST OF SPORTS FIELD IRRIGATION

Sports fields *must* have water. But the cost of watering them is becoming an issue for grounds maintenance budgets. Turfgrass sports fields require irrigation to maintain plant health and healing, so playing surfaces stand up to the pounding they get from game play. Synthetic turf fields require less water than their natural counterparts for cleaning and cooling, but they do require water nevertheless. Apart from irrigation, sports fields must also drain.

Building sports fields that can be irrigated efficiently and drain promptly is a science. Building them so they disperse, capture, store and reuse the water that nature provides them approaches art. The new softball and baseball fields at Lovett School can be described as state of the art, and feature a system to capture rainwater and reuse it for irrigation.

Eric Holland, co-owner of Precision Turf LLC, Buford, GA, explains that rainwater falling on the fields drains into 4-in. drain lines on 30-ft. centers. The fields' sand cap construction has a 6-in. rootzone over a permeable gravel base. They are turfed with Tifway 419 Bermudagrass. Water falling on them filters through the grass and the gravel sub-base before draining into a 250,000-gal. underground cistern. Rainwater from elsewhere on the campus, including runoff from parking areas, is also naturally filtered before it also drains into the underground cistern.

"Ever since we had the drought of 2007 and 2008, everybody is looking at alternative sources of irrigation water," says Holland, whose company installed the fields.

Irrigation consultant Bob Scott, owner of Irrigation Consultants Inc. in Conyers, GA, oversaw the project just as he has nearly everything related to irrigation at the site over the course of the decade-long campus renovation.

"Early in the process we got with engineers and other people to take a serious look at water harvesting," says Scott, past president of the American Society of Irrigation Consultants. "Everyone liked the idea of an underground cistern, but they realized athletic fields take a lot of water. The civil engineers then began developing the storm water system that empties into the underground holding cistern."

The underground cistern is connected to a 50,000-gal. storage tank located beyond the outfield fences between the baseball and softball fields. When a level control within the cylindrical metal tank indicates the tank is running low on water, a pump within the underground cistern replenishes it. During an extended dry spell, water for irrigation can also be drawn from a 0.33-acre pond located on the campus and pumped to the above-ground tank.

Previously, a pump drew water from the nearby Chattahoochee River to replenish the campus pond. Today, the captured rainwater also decreases the need for potable water from Atlanta.

Jeff Rountree, director of plant operations for Lovett, knows the importance of irrigation for providing green, healthy turfgrass and a safe playing surface for young athletes. Lovett provides sports facilities for more than 60 school teams.

Rountree, who has 42 people on his staff, says Lovett School has four main natural grass sports fields: one each for football, baseball, softball and lacrosse. A natural turf, multi-sport field is available when the turfgrass on one of the others is rested or renovated. The school is also installing a synthetic turf sports field. It will be irrigated with eight water cannons.

"Last year, we came out of a long drought. It was difficult to maintain our sports fields. If turf can't be watered and the grass dies, the ground can turn into concrete," says Rountree, who was born and raised 20 miles from the school where he has worked for 34 years. "Fortunately, we could draw water from a well, and we could maintain all of our fields with the well water. We have a 600-ft. deep well on campus. It gives us enough water so that at night when demand for irrigation is low, we can pump water and replenish our pond."

The Lovett School has an extensive irrigation system on campus, with pumping stations custom-built by WaterTronics.

Rountree says the next big improvement will be automating the campus irrigation, which means integrating the site's nine irrigation clocks.

"We hope to be able to tie them into a central control system next year to help us use water even more efficiently," he says. *— RH*

Much of the irrigation water required to irrigate Lovett School's two new sports fields comes from captured rainwater.

continued from page 20
worked very hard in choosing and using materials, means and methods to achieve a higher level of LEED certification for our middle school."

A collaborative project

While the school's faculty, staff, students, parents and other supporters celebrated the Gold recognition, it wasn't the planners' main goal when the school's major renovation process began more than a decade ago. Their larger vision has always focused on providing students with modern, state-of-the-art facilities to prepare them for the ever-changing career needs and opportunities of the 21st century. The other part of their vision included elevating the school's facilities — buildings and campus — to a new level of environmental sustainability.

Like all projects of this size, its many different components required the talents of many professionals and contractors, and everybody following the spirit (if not the exact dictates) of the original master plan. Conditions, as in all sizable projects, called for some modifications as work progressed, says Scott.

Several experienced architecture firms took up the challenge of fulfilling the school's vision, including the Atlanta-based landscape architecture firm of Hughes, Good, O'Leary & Ryan Inc. (HGOR). Its involvement began more than a decade ago as it partnered with committees comprised of school officials and a diverse group of other firms and professionals in crafting the project's master plan.

Landscape architect Lauren Standish of HGOR says creating the visionary plan and obtaining the necessary permits and authorizations for the project took more than two years. Only then could moving dirt at the site begin. The ambitious scope of the project required it be approached step by step, a process that has lasted more than a decade and is just now winding down, says Standish, who served as project director for HGOR on the site.

The school's makeover began ambitiously with the construction of a 300-space parking garage, which opened up more green space on campus. It continued in phases, month after month and year after year, with the construction of the new upper school, then the building of the new lower school and, finally, the new middle school, now in its second year of use. HGOR partnered with and relied upon the services of experienced contractors, such as ValleyCrest and irrigation consultant Scott, throughout the project.

"Our overall role was to make the vision of the landscape architect and the school a reality," says ValleyCrest's Prantil. "Lovett spent a great amount of time thinking through what its vision was going to be, and it was our job to put in exactly the installation it wanted and expected."

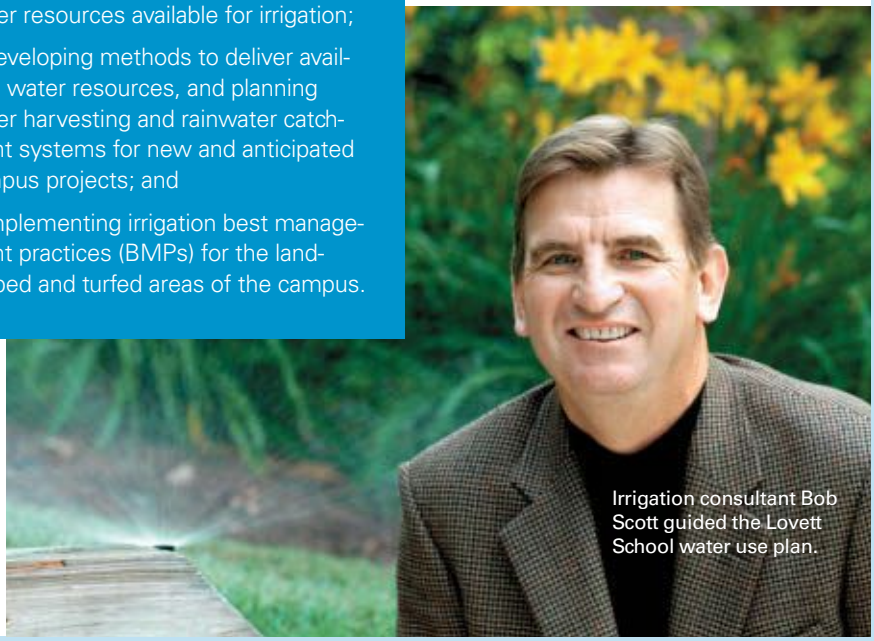
This was also Scott's role on the Lovett School project — making sure the school's vision, at least in terms of irrigation and outside water use, was being realized.

"Perhaps the biggest challenge in a project like this is getting and keeping an overview of the project's goals, and also keeping everyone aware of those goals, keeping everyone informed," he says. "This includes the client, the design teams, the construction teams, and making sure it all remains tied together.

"In the end, of course," he adds, "you want everything in the project to work as it was designed, and you want it to perform and be efficient for a long time. And, obviously, you're also working to make sure it ends up providing the client, in this case, the school, with a tangible payback. When you conserve water, and in this case we're harvesting and saving rainwater and runoff, you're providing a tangible payback." LM

THE IRRIGATION CONSULTANT'S ROLE AT LOVETT

- Working with the owner during development of the master plan;
- Analyzing the existing irrigation systems on the campus, determining irrigation demands of the various systems around the campus, and identifying water resources available for irrigation;
- Developing methods to deliver available water resources, and planning water harvesting and rainwater catchment systems for new and anticipated campus projects; and
- Implementing irrigation best management practices (BMPs) for the landscaped and turfed areas of the campus.



Irrigation consultant Bob Scott guided the Lovett School water use plan.

PHOTO COURTESY: IRRIGATION CONSULTANT SERVICES, INC.; ILLUSTRATION (RIGHT) BY: ISTOCK INTERNATIONAL INC.

11 steps to a great irrigation project

Follow this 'recipe' for working with general contractors, landscape architects and landscape designers, and you're on your way to making every large landscape irrigation installation a winner.

BY **BRIAN E. VINCHESI**, LEED AP, CID, CIC, CLIA, CGIA, GWM-L

If you have been in the irrigation contracting business for very long, you've had successful and unsuccessful projects. There's a good chance your first unsuccessful project may have been your first irrigation system installation. Looking back, I know mine could have been done better, especially the first one. It was also the landscaper's first irrigation system installation; need I say more?

There are several keys to having a successful irrigation installation project. At the residential level, you have control, and you make all the decisions. If it's wrong, it's your fault; there is no finger pointing. However, in larger systems that you may have provided design/build services or especially professionally designed systems (irrigation consultant, landscape architect or civil engineer), there are a large number of places where things can go awry — and quickly.

In many cases, these problems may not be your fault, but you're the one left holding the bag. There's a learning curve, and you must educate yourself about these more detailed systems for them to be successful. In other words, educate yourself before bidding, not after.

Communication is vital, regardless of the size of the project. The more you communicate with whomever is overseeing your work and/or paying you, the better off the results of the project will be. You cannot overcommunicate, as long as you are being professional and have legitimate questions, concerns or gripes.

Step by step

What follows is my recommended procedure to follow to make sure each project is both successful and profitable:

1 **Do your due diligence.** Take the time to look at the irrigation plans, read the specifications and study the details to understand exactly how to install the irrigation system. First, look for things that you and/or your crew are not used to doing. Your staff will either need to be trained on the new procedures, or be reminded to do it differently. Spend the necessary time to understand what's expected before putting shovels into the ground. You'll be surprised how much more smoothly jobs will go if you thoroughly understand the plan. It also makes it easier to get your money and get out at the end of the project.

2 **Get the necessary clarifications.** As you study the plans, specifications and details, look for inconsistencies between the specifications and the plans, and especially between the specifications and the details. Is there missing information? Pieces missing? Equipment not specified? Is there something on the plan that makes no sense, or makes the plan unworkable? Will you be able to install it the way it is designed or specified?

Remember, at the end of the job, it's still your responsibility to have a working system. Finger-pointing works much better at the beginning of the project, before anything is installed, than at the end — when it just plain doesn't work or no one wants to pay for it.

PROVIDING A LANDSCAPED SITE WITH IRRIGATION THAT KEEPS PLANTS HEALTHY AND ATTRACTIVE BUT ALSO MAKES EFFICIENT USE OF WATER REQUIRES A CAREFULLY CRAFTED PLAN.

3 **Specify your submittals and substitutions.** If you're not used to professionally designed commercial work, the submittal process will be new to you. The specifications will require that you submit a product sheet for each and every product that was specified or is to be included in the irrigation system. Submittals are also where you would request substitutions from the equipment that is specified. However, submittals must be understood and prepared. Poorly prepared submittals are a red flag to both the general contractor and the professional designer that you don't understand the specifications or the design, and/or you're not qualified to install it.

Create submittals to identify the products (and the features of the products) that you are planning on installing. Be as exact as possible. Substitutions aren't a good idea if the specifications detail exactly what products are to be used. If the specification says "or approved equal," substitutions might be possible.

Your supplier can help you with properly preparing submittals. Install what was approved on the submittals. It's generally a bad idea to install products other than what you submitted.

Last but not least, submittals obviously have a cost to them. Include that cost in your bid.

4 **File your request for information (RFI).** Once you've bid the project, the best way to ask questions is through a formal process using an RFI. File the RFI with the general contractor, and the responsible party will respond to it in writing. An RFI is still an excellent way to clarify inconsistencies or ambiguities after you have been awarded the project, but before installation. You cannot file an RFI after you have performed the work.

5 **Adjust to changes and change orders.** Many times, the landscape designer or architect will change the landscape design during construction. He or she may change it slightly, or make major changes. It's not uncommon for an irrigation contractor to install a system as per the irrigation design and pay no attention to those changes. The result is an inefficient irrigation system that doesn't match the landscape. Communicate and understand potential changes before they occur, so you can adjust the irrigation system accordingly.

Make sure the landscape architect/designer understands the implications of changing the landscape before installing any irrigation. File a change order. Ideally, you'd file the change order before you do the work, but many times that isn't possible. Again, regularly communicate with the general contractor. This will help the change order process — especially when they are filed after the fact — go more smoothly. Never anticipate you will be paid for work you have done if there was not a change order approved ahead of time.

6 **Flush.** There's nothing worse than having a new landscape that needs to be watered if sprinklers repeatedly clog and don't properly operate. Ideally, the system will be complete and there will never be

a clogged nozzle or an inoperable sprinkler. Spend the proper time flushing the system to make sure everything is operational. This may keep you from getting called back to the site.

Also, unclog nozzles on a regular basis through the first month of operation. Specifications often require the irrigator to be responsible for clogged nozzles for 30 to 90 days after the system is complete.

PHOTO COURTESY: EWING IRRIGATION

Adjust arcs. Just as you properly flush the system so you do not get clogged nozzles, take the necessary time to adjust the sprinkler arcs so they're properly watering what they're intended to water. Make sure none of the arcs are watering the hardscapes. Every time you have to come back to adjust something, it costs you money, but it also shows the general contractor and/or the owner that you didn't install the job properly.

8 **Create an irrigation schedule.** Even though you may not be required to provide (or program into the controller) an irrigation schedule for the project, it would be prudent to do so. After all, you want the irrigation system to be properly scheduled as much as the property owner does.

9 **Provide a record, normally known as built drawings, at the completion of the installation.** A good record drawing gives everyone a good understanding of what was installed and where. Record drawings should indicate sprinkler model and nozzles installed, zone valve locations and wire and pipe routing and sizing.

10 **Provide an operating and maintenance (O&M) manual.** Most commercial projects and professionally designed irrigation systems require an O&M manual. Topics might include startup procedures, winterization procedures, approved submittals, a suggested irrigation schedule, a list of supply houses, a written warranty statement and a list of numbers to call for service. The manual may also include the controller unit's operating and maintenance instructions and any other significant items in the system.

11 **Know the warranty requirements of the specifications.** A one-year warranty is standard, but an extended warranty might be required. Account for the costs of any extended warranties in your bid. Be aware the warranty of many projects require you perform a first-year winterization and spring start-up.

Every item and procedure listed in this article will cost you — either financially or with your time/effort. But taking shortcuts or not following the plan may result in an even larger cost: the bad impression it leaves with a landscape architect/designer and the property owner.

Follow the plan I've laid out in this article, use quality materials, install the project as it's been designed and chances are you'll end up with a successful project — and you'll get paid. LM

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Next month, learn how initiatives such as Sustainable Sites (SITES) and WaterSense will shape landscape irrigation.

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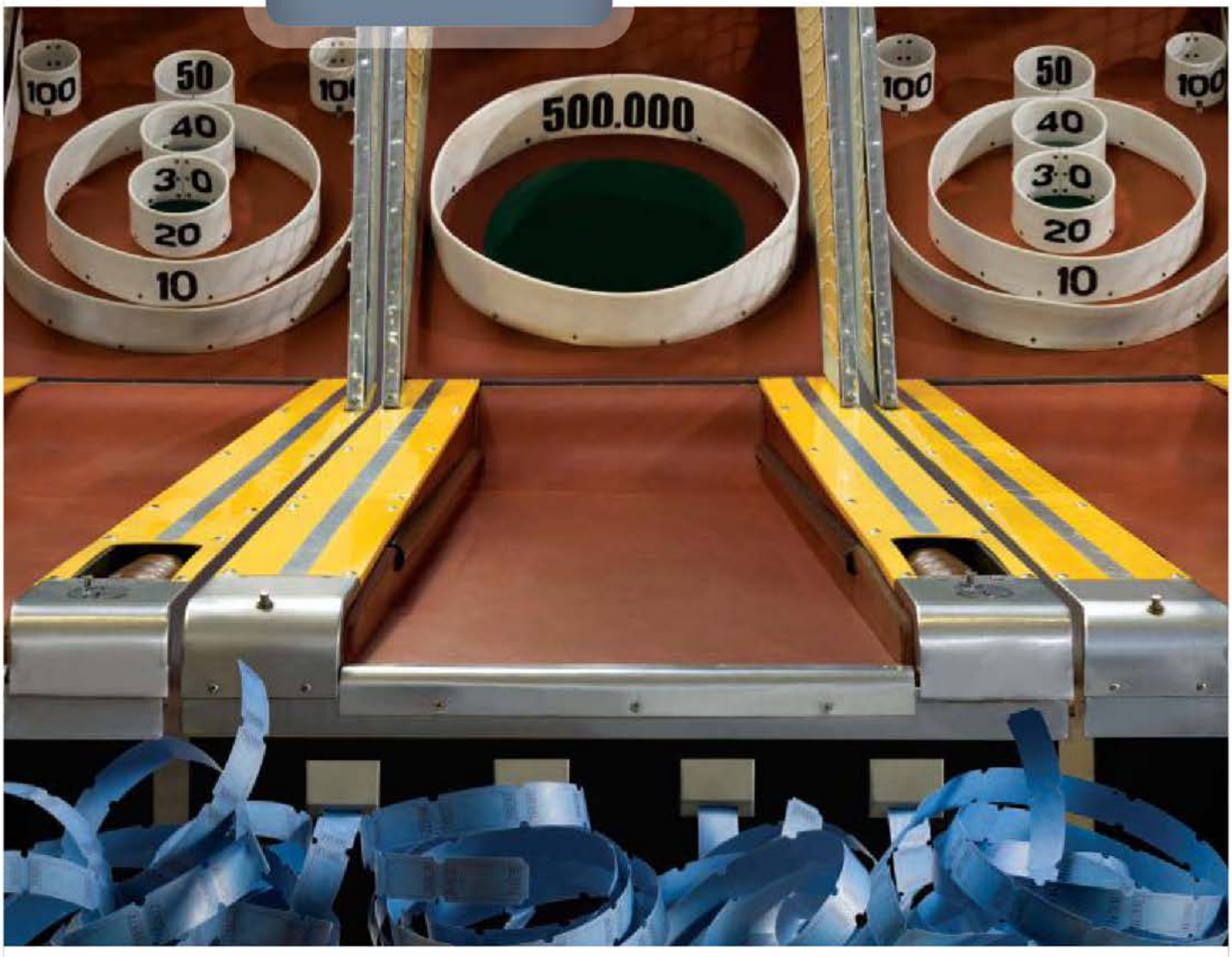

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