



Managing a Successful Irrigation Installation

BY LUKE FRANK

Your performance as a sportsturf manager is based on sustaining performance turf through the efficient use of whatever environmental, human, and fiscal resources available to you. Of critical importance are decisions around turf species, water resources, nutrients and pesticides, skilled full-time and seasonal crews, equipment selection, management and maintenance and more.

How can you ensure the long-term efficient use of such resources? The irrigation system represents a majority part of your facility's critical infrastructure upon which a successful venture will be built. Design and installation decisions should not be made lightly. Irrigation performance has decades-long impact on how much power and water are consumed, how much nutrient and pesticide load will be required, where your crews will be distributed across the site, and the cultural practices demanded of turf and plant material.

Installation impacts performance

It is at long last widely understood that irrigation is an engineered science, requiring considerable expertise to fully benefit from technological advances. The design, installation, and management of an irrigation system are complex processes that demand sound knowledge of available products, system hydraulics, horticulture, soil and water chemistry, and even construction.

A quality irrigation system installation relies on understanding the individual components and how they work together to achieve your irrigation objective. Armed with this knowledge, a competent installation contractor will better understand what changes can be made in the field when interpreting a design from paper, and provide support after the installation.

It is critical that an installation contractor fully understands this fundamental tenet of system integration and how it will affect the following performance characteristics and site conditions:

Construction codes. Specific installation requirements regarding the depth at which valves and piping must be installed, minimum backflow prevention requirements, easements, construction document fulfillment, utility locates, system wiring and more.

Water sources and quality. The location, quality and reliability of the resource must be understood. For example, will reclaimed or surface water be used or stored?

Soil properties. Percolation properties through the soil profile, as well as how soil characteristics affect trenching, backfilling, tamping and thrust blocking applications to preserve system performance and designed durability.

Plant material. The incorporation of turfgrass, trees and seasonal color in a facility design and how the varying watering needs of each can be addressed through system zoning, accurate water placement and progressive scheduling.

Sound hydraulics. A complete understanding of flow and pressure conditions that determine how pipe sizing and routing will be compatible with the watering window. Such inputs include static and dynamic pressure, water velocity through the piping (which should be held under five feet per second), hoop stresses and water hammer at the fittings, pressure at the emission devices, hydrozoning, etc.

Controller operation and performance. The use of software and scheduling features, like weather and soil sensor inputs, multiple runtimes, irrigation pulsing, syringing, system override, troubleshooting, field satellite, communications (hard-wire, trunked radio, remote control, etc).

Sensor and monitoring equipment. Placement and functions of equipment that provide real-time soil moisture-level information, flow rates and weather inputs (wind direction and velocity, temperature, humidity and precipitation).

Sprinkler heads and other emission devices. Knowledge of zone pressure, pressure at the head, valve-in-head control, throw distances, arcs, trajectories, nozzling and so forth. Also an understanding of system drainage, turf and irrigation exposures (to equipment, users, sun and wind), topography, and more.

Water system protection. Backflow preventer selection and placement for preventing backpressure and backsiphoning on sites with extreme elevation and relief, reclaimed water, fertigation and so forth.

The three primary components of a high-performance irrigation system are design, installation and management. None of these components masterfully performed individually will ensure that you are reaching your watering target efficiently. A superlative irrigation design can be reduced to hydraulic theory if the installation and management components are shoddy. Powerful installation principles can be strictly adhered to but ineffective if the design is flawed and management is haphazard. And of course, many of us perform miracles with an inherited irrigation system that was designed on a napkin and installed by apathetic, transient labor.

Ensuring a high-performance irrigation installation rests first upon having a high-performance design - followed by project coordination and supervision of the installation, and then system management training. Ideally, the project will best be served if all three of these functions are performed by a single, qualified, indepen-

dent irrigation professional.

Irrigation consultants should have a thorough understanding of various system components: backflow preventers, pump stations and controls, control valves, piping and fittings, sprinkler heads and irrigation control systems and how they operate as a system. As important as irrigation equipment selection is to the performance of a system, good selection alone won't ensure that an irrigation project succeeds. These system components must be properly installed and work in concert to address specific site demands.

It can't be over-emphasized that a large-scale irrigation installation involves much more than planting equipment into the ground. In addition to the above-mentioned considerations, a quality irrigation system installation should reflect the diversity and skill of various additional site specialists, including property owners and managers; plant suppliers; landscape architects or designers, managers and maintenance contractors; engineers; and irrigation designers and managers. This group of specialized professionals must work in step to create a sustainable, aesthetic visual presentation within a reasonable budget and timeline.

The scope of such a project requires detailed knowledge of each professional's role, as well as general project oversight and coordination - thus the recommendation to explore the services of an independent irrigation consultant. The larger the project, the greater the opportunity for irrigation efficiency and performance and the greater the margin of error that can result in expensive water waste, hardscape and plant replacement, and fiscal accountability for a poorly performing system.

Remember too, that the more involved an installation contractor or irrigation consultant is at the project's planning stage, the greater the opportunity for success. Pre-construction meetings are a great place to garner an increased understanding of the overall project and the people involved. At that point, the installation contractor can have walked the site and taken field measurements, so any design and installation concerns can be addressed prior to construction.

In addition to the actual installation, contractors and consultants have a critical role in filing the appropriate construction documents at the appropriate time. Although it seems rudimentary, "misfiling" legal paperwork can instantly shut down a project.

After developing a reasonable level of confidence in prospective contractors or consultants, how do you make your final selection? References. Certification, insurance

and bonding, and active participation in professional organizations hint that a company takes its business seriously. But ask for references and follow up with phone calls. Successful track records are important in this business. **ST**

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