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THE MIDWEST ASSOCIATION OF GOLF COURSE SUPERINTENDENTS

COURSE

NEW IRRIGATION SYSTEM?

MIDWEST SCHOLARS

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Welcome
Autumn

New Irrigation System?

Simple or Complex - It's Your Choice.

Larry Collins, EC Design Group

Before the powers that be at a golf facility decide to invest in a new irrigation system, they need to determine whether one is actually needed. One of the best ways for the club to compile data helping to make this determination is to have an audit or system evaluation performed.

System evaluations review all the components (central, controllers, sprinklers, pumps) and provide feedback of the current state of the system. Many times golfers see sprinklers flinging water and assume everything is operating just fine. However, what they don't know is some of the older sprinklers are running on small piping networks and the sprinklers are highly inefficient. Newer sprinklers with proper pressure and flow will put down 1.1" of water in some spots of an irrigated area to get 1" everywhere; older sprinklers can be as high as 1.8" in some areas to get 1" everywhere - if pressure and flow are low, these ratios get worse.

Recently there has also been a big push to reduce mowed turf ... that's a great idea if there is not irrigation being thrown into these areas that are being converted. Many times the water throws partially into the converted areas and into maintained turf which generates a point where a decision needs to be made. Does the maintained turf now struggle due to water being turned off to the new "native" areas or is the "native" going to be watered? Watering of these new unmaintained areas is a huge waste of water, and has to be taken into consideration when looking at a new irrigation system; often times additional sprinklers are required to keep water out of the unmaintained areas.

New systems with proper pipe sizing and sprinkler spacing make it so a superintendent can water much more efficiently. Wall to wall systems are great but if they lack control, they are no better than mass watering a field.

In the past when superintendents were deciding on a new irrigation system, they chose between brand T and brand R. Did they want to stick with a two row system or make the big jump to a three row system? After these choices were made, and the membership revived themselves from seeing the price tag, the systems were installed lasting the next 15-

25 years.

Things have changed a little in the last 10 years. There are still a lot of the aforementioned systems in the ground that are running very well and clubs are happy with their investment. With today's technology and the ability to get more information from peers in the business, this decision making process has become a little more challenging. There are certain buzz words in the irrigation business these days, like "HDPE" or "two wire". These buzz words generate a lot of questions and confusion when starting the process of replacing an irrigation system. It's the job of irrigation consultants, manufacturers, distributors and friends in the industry to help clarify what these terms mean.

There are few things however, that have not changed. The ability to control where water is applied, for a precise amount of time is definitely one of the biggest focuses in today's irrigation systems. The task of getting decision-makers to understand that putting more sprinkler heads in the ground to water less seems counterintuitive, and poses a very realistic challenge. There are going to be sprinklers that are used much less than others, although necessary to help keep the playing conditions to the standard that golfers are asking for. Firm and fast is a tough balance if you also want the rough to be penal. It is the job of the irrigation consultant to design a system that is fiscally responsible as well as one that meets the needs of the golf course superintendent. Every system is different and there are no cookie cutter answers to any system.

The other issue that has become part of this process is cost of ownership. Frequency of repairs, overall maintenance and life of the system all play a major role in painting the picture for a membership to help justify the expense. Reviewing current cost of ownership versus what a new system will save annually is important to present to the facility.

Spending \$50,000 annually on irrigation repairs doesn't make it better, it just keeps it going.

As the process begins, it is important to realize that the product decisions are obviously based on personal preference, but these decisions have to also be based on what's the best thing for the club for the next 20+ years. Today's superintendents do a good job of mixing these two things.

The first thing that most consider is the type of control system that they want to use—the newer two wire systems or the conventional satellite controller-based systems. The two wire systems have become more and more popular and also are the best answer in some specific applications. Early on, a two wire system was typically chosen if the course flooded or had high vandalism rates, as there are no field controllers on two wire systems so the components that would be damaged in these scenarios are not part of the equation any longer. Manufacturers have progressed in developing the two wire systems as an option for all types of golf courses. The install list of two wire customers ranges from the ultra-high end club to municipal nine-hole course that is investing in making golf better for its community. Many courses just don't want to see controllers anymore, and the two wire systems makes this possible. Even though there are no controllers, there is plenty of logic at the sprinkler and it is not considered a downgrade to use this type of control system.

The conventional satellite controller system is still very popular. The obvious difference between the two wire and this style is that there are field satellite controllers on the course. These satellites give the end user the opportunity to troubleshoot and/or water from each location rather than strictly the central computer. Satellites now are also easily upgradeable as new firmware is released. This style control system is still installed at a higher percentage than two wire, but that gap has closed.

Central control is something that usually is decided upon very early on in the process and the software is always getting better and each manufacturer has features they do very well. Whether two wire or satellites are chosen, each manufacturer's software works with either style of control system.

One item that has made the biggest impact on the new systems in the last 5-7 years has been the type of pipe. First, in regard to PVC piping systems, there is absolutely nothing wrong with a PVC system; there is still a high percentage of systems that are installed with PVC. The good thing about PVC systems is that installers know the best way to install them and specifiers know the best materials to specify for fittings and valves. Properly installed PVC systems last a long time.

A new style of piping networks is High Density Polyethylene (HDPE). The main difference between PVC and HDPE is that HDPE pipe is fused together; there are no fittings and the entire system is monolithic. HDPE is much more pliable than PVC and is a great option for any road or bridge

crossing regardless if the system is PVC or HDPE. HDPE has been around for a while in the gas and oil business, however it's newer to the irrigation business. As mentioned earlier, with reference to PVC, the fittings and valves have mostly been standardized - this is an ongoing process with HDPE. There has been a lot of time spent determining which fusion method (sidewall, electro, butt, or socket) works best. The type of saddles, valves and items of this nature are continually vetted to get the best combination for the piping network. Proper training for the installers is also key with HDPE. Understanding compatible fusion (fusing thicker walled pipe to a pipe with a thinner wall) is critical to the success of the install. Irrigation designers and contractors are continually investing time and effort into specifying the best materials and have the best installation practices used. In the last 5 years over 50% of the systems we have designed and then had installed have been HDPE.



HDPE Pipe (black) vs. traditional PVC piping in blue; Notice how the change of direction is accomplished between the two.

After spending time doing the research, it is now time to design a system. The first thing all courses want to know is how much it will cost. There is a wide variety of answers to give to the club, although none of them mean much until some kind of plan/layout is devised. Every property is unique, every system is unique and to use pricing based on what neighboring clubs spent is not the most responsible way to put budgets together. Once a coverage plan is done, tangible budget numbers can be provided. Systems in the Chicago area have a wide range of dollars spent. The prices on systems in Chicago range from \$1.5 to \$3 million. There are a lot of contributing factors to this range - some of them are as follows:

- Coverage – double row, triple row, ins and outs on fairways
- Piping – HDPE vs PVC. HDPE can add 5%-10% to the total cost
- Piping layout – looped fairways vs herring bone
- Private club vs Public course - Prevailing wage on public courses drives the cost way up
- Two Wire vs Satellite – percentage varies depending on the layout of the course
- Development course vs stand-alone golf course – devel-

opment courses can have several road crossings and the layout can make it difficult for main lines to be shared.

- New pump station – along with pump station, consider whether a new wet well and intake need to be installed with a new pump house.



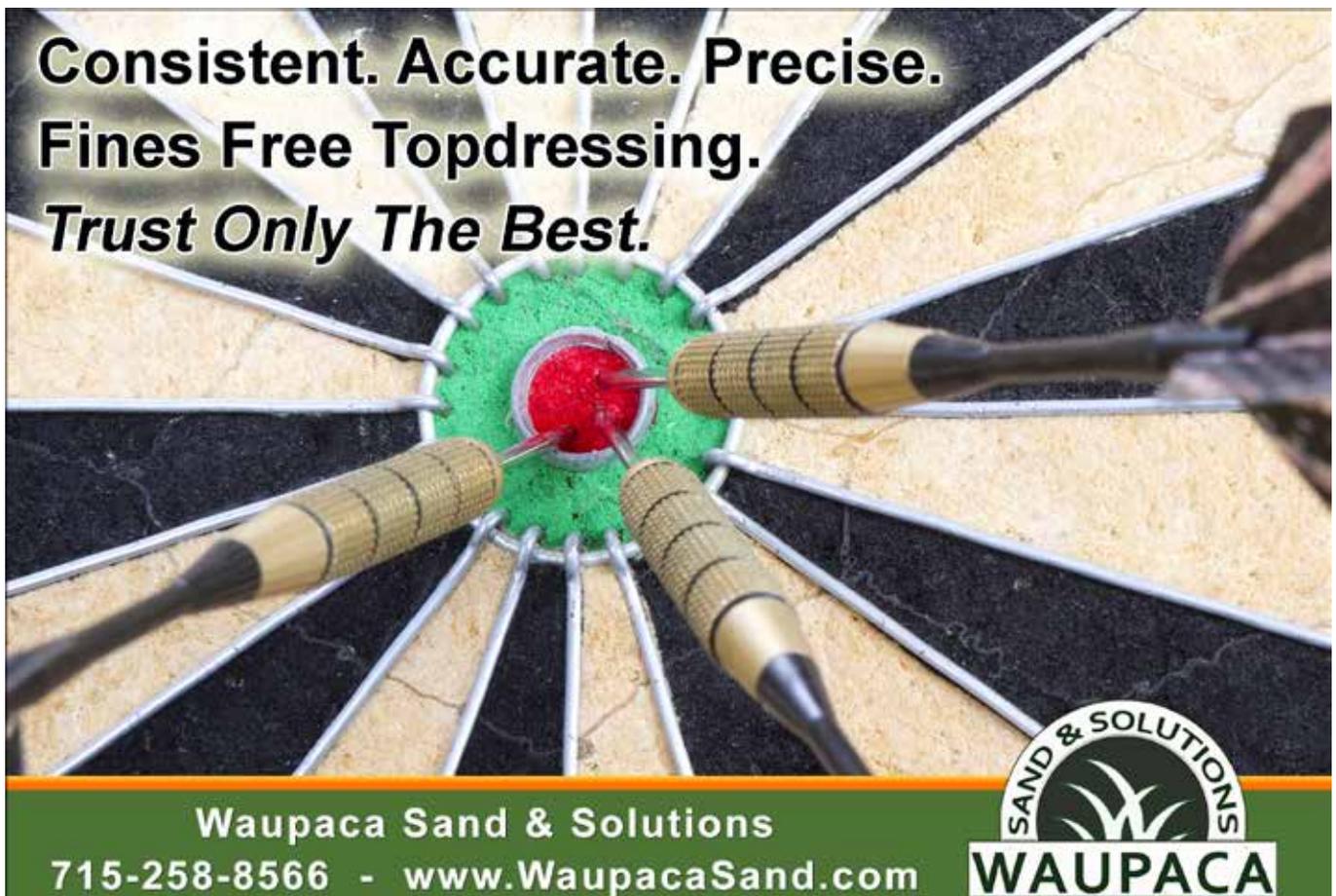
HDPE piping with valves installed ready for installation.

Once the plan is approved and sent out to bid, it is critical to hire the right contractor for the facility, making the transition a very painless experience. Typically, main lines are installed first in late summer without closing any of the holes on the course. When laterals begin installation after Labor Day, one hole at a time is closed. It is a relatively easy process for the club to endure. Sod is lifted and replaced on main line

trenches and 2" lateral lines are pulled in leaving very small slits in the turf. Most golfers are surprised at how painless the process is, and feel very excited and proud of the investment in the course.

As you can see, there are a few more decisions that need to be made than there used to be. Once control and coverage are determined, it is important that course representatives spend the time talking to others who have recently installed systems to see how it went. It is also critical to understand what is going to be installed and make sure that it is the best thing for the course long term. A lot of the material specification will be done by the irrigation consultant, but it is important to be involved in the process and make sure there is transparency to all involved.

After all of the above items are discussed, and the irrigation installation is complete, most people will see installing a new irrigation system is not nearly the headache that they thought it would be. There are some big decisions to be made on the front end, and some minor inconvenience during installation, but the end result is an efficient, reliable irrigation system that will continue to improve golf course conditions for years to come. @



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