



BIG irrigation

Working with a "beast" of a project — Will you be dinner or the diner?

BY LORNE HAVERUK AND RUSS PROPHIT

Let's look at a typical big project," said Tim Malooly, president of Irrigation Consultants & Control, Inc., Plymouth, MN, "1,200-acre master-planned community with common area irrigation being fed from multiple linked small lakes. Add holding ponds, delivering thousands of gallons of water per hour through a network of buried pipes ranging in sizes from one to 10 inches in diameter stretched out over 12 miles."

Get the picture? Big project. Welcome to some of the most grandiose, largest, mind-boggling irrigation in the nation. If this was golf or Ag, not so large, but for turf and residential, this is humongous.

State Capital Mall, Dancing Waters. Cobblestone Lake. Spirit of Brandtjen

Farm. ARCC Campus. These names sound large. And, for good reason. These are big commercial, master-planned and institutional projects that have been completed in Minnesota or are still ongoing, phase five. They will devour you if you let your guard down — even for an instant.

Getting started

Your goal is not only to survive, but to feast on the monster, which first comes into hazy view as a concept by a dream team, part of a large development company or consortium that acquires a large tract of land. Slowly its features emerge as the development moves a step at a time towards culmination. Engineering firms

Portico, a residential development project, required a massive irrigation plan.

create AutoCAD and/or PDF drawings, and the features of the beast sharpen. Next, the

landscape design firm creates concept and renderings again and again.

Take a pool table, get out your tape gun and paste the drawings together. The green felt is now covered with white paper full of lines and symbols depicting the scope of the project. The true size of this thing comes into focus.

But wait, the irrigation system must be designed. Pick a corner and work your way to the other corner. Sounds easy doesn't it? Yeah, if you're an experienced design firm and have talented staff to back you up.

Then there's the question of time. Do you have 10 days to devote to this design, and that is after all of the legwork and investigations are completed?

Welcome to the profession of irrigation design. You're an artist, engineer, scientist, horticulturalist, mathematician, dreamer and a get-it-done person. But make

one mistake on the hydraulic calculation for the mainline and you become lunch for the beast.

There are more than a few brave souls who routinely take on these projects. To their credit, they're willing to share insights into the training, approach, strategy and completion stages, so we can better understand how to win.

One of them is Rick Walter, president, Northway Irrigation, Circle Pines, MN. "We are working on a project in Woodbury that is in stage five and has one more to go," said Walter. "Stages three to six are about \$3.8 million for landscaping, irrigation and sod. We weren't involved in the

continued on page 54

continued from page 52

first two but I'm sure the total will be somewhere around \$5.5 million. The area covers about 700 acres. They're planning another development in Farmington that is around 1,100 acres.

"Last year we completed a development in Rosemount and watered about five miles of boulevard and entryways with center islands," added Walter. "In Hugo we're working on another development that is large. This is the third development we have done for this company, and it's planning another in Forest Lake and in Rochester. This is a private developer."

Continued Walter, "The larger developers are still doing their thing and the small ones have slowed down. With housing slowing down you would think that the developers would stop making new lots. They have slowed but not stopped. Maybe they know something."

Getting help

Northway Irrigation doesn't deal with consultants or designers on these projects because the company does its own designs. But that's not always the case on smaller projects.

"There have been smaller projects we did this year that have been designed by others and have been done, shall we say, poorly. We had one that the consultant had the wrong scale," explained Walter. "We bid a park at one inch to 20 feet when the right scale was one inch to 40 feet. The consultant tried to put the blame on us but it didn't work. The city paid us for the main line and the consultant will have to make up the difference in price."

"The irrigation contractor takes huge risks bidding on projects that have not



A Hoover Pump Station will supply 2,100 gpm of water to homes and common areas.

Tips for tackling THE BIG JOB

- ▶ Sell the result. Stress project partnership.
- ▶ Be up front to build trust. It makes everything move more smoothly.
- ▶ Don't even think about the job if you're doubtful about your ability to deliver the desired outcome.
- ▶ Make it clear that you are the go-to person.
- ▶ See the "big picture" of the project and how all the pieces come together.
- ▶ Always be professional. Your professionalism is part of the value, perceived and real, of your work.

been designed right. There should be more credibility among designers," said Walter, who insists that the designs make it possible that everybody is bidding on the same thing. His company scrutinizes every design it gets now. For one thing, projects are sometimes designed in other areas of the country and specify unusual components. How do you win if the design isn't right for the region or particular components aren't available?

Walter gave the example of a project that his company attempted to land for a nearby school district. His company had done work for the school before and had established a good relationship. Even so, it didn't get the job.

"They put out a bid about five years ago for a new school on their campus," he said. "The contractor who installed this got in over his head. There were glue joints that had trouble. They used pipe cement on the nipples installed in valves and tore the threads out of the valves. They probably had an inexperienced person involved with putting the pipe together. Five years later they couldn't trust the system to run."

"Well, the irrigation contractor did not have to put up a bond, the general contractor did," Walter continued. "The school is going after the general, and he might have to use his bond to redo this project."

The lesson here is that taking the low bid can not be a good thing unless the irrigation contractor has a good reputation and is certified.

Get the idea? Think it might always be a good idea to step back on these types of projects and take a critical look at what it takes to create the proper design and put together a solid plan for a project of this size?

Creating a good design takes experience and training, said Russ Proffit, president of Precise Irrigation Consulting and Design, Winter Haven, FL. "You can't start

continued on page 56

continued from page 54

a project without knowing what's up. A good irrigation consultant needs to be involved from the get go."

In other words, conception of the project needs to be discussed. Get a handle on soil, plant, materials, anything and everything that you will be dealing with. A professional design takes careful planning, conceptualization and good old fashioned engineering. Often this necessitates partnering with a professional design consulting team.

Developing a plan

What about the water window? How long can you irrigate? How many times per week? Do you have an understanding of plant water requirements? If that didn't make the equation complicated enough, we're all aware that each region is different and requires designers to know and be able to deal with a daunting variety of conditions and restrictions.

"Once we are given the sheet of paper, the mathematical process begins," added Prophit. "Once we decide what the true maximum irrigated area will be, then we can determine the source of the water – lakes, rivers, streams, reclaimed/reuse water and, in worst case scenarios, potable water. Next we figure out how to deliver the water. Pumping stations are commonly used for big jobs. They cause their own special problems. For one thing they require power and lots of it. Availability of type of power will dictate the type of pumping station specified. Due to different power requirements – VFD pumping stations allowing us more flexibility in our selection due to single-phase power than three phase. Now we can use larger capacity pumping stations with single-phase power," he explained.

"Ability to pump and location is next determined. Also the feasibility to have multiple pump stations gives us the abil-

ity to move massive volumes of water utilizing multiple stations."

With the heads and emitters laid out, the piping systems and other components can be placed. The mainline is drawn on the plan with appropriate isolation valves, road crossings and sleeving shown, so the development can continue to build its roads, medians and curbing while the landscape architect contemplates the overall image of the project.

Now, the control system must be decided. What type of system? This process alone can be time consuming. The various new technologies available for master controls for large systems require careful consideration and knowledge. Consider patterns, how the site will be built, number of phases, as well as how the development will be maintained and by whom? Developers need to supply input

A good irrigation consultant needs to be involved (on a project) from the get go.

regarding what level of efficiency they are striving for regarding water savings, efficiency, operational expenses, reuse water, cisterns, LEED points, green roofs and budgetary restraints.

We now play the waiting game. Factors that cause us to wait include permitting issues, design changes, the weather, endangered species act, more permitting issues, more weather and we finally get the go ahead. We now have the landscape architectural plans in hand. We are ready to begin designing irrigation with piping,

At over 600 acres, the Portico site was designed and installed by Big Tree Inc. in Fort Myers, FL.



valves and heads. Now becomes the daunting task of deciding the most efficient way to deliver the water to the required areas, said Prophit. And to stay within budget, usually the most fearsome aspect of the beast.

You've worked through the design process. Are you still in the game? What next? In many instances the designed and specified project now goes through the bid process.

Following through

You must be in the circle of influence to be able to find the posting, then track down the information and, once in hand, take a good sober look at the beast to see if you're up to grabbing him by the horns.

You'll make your final decision once you thoroughly read and understand the specifications and the plan. If the materials on this plan are not something that you're not familiar, stop. Do your research before you bid.

Once you become familiar and comfortable with the design and specs, the task of doing your material takeoff is upon you. Even when the designer provides a material takeoff, check it. Many plans coming from professional design and consulting firms have a disclaimer that states something like: "It is the responsibility if the contractor to check all quantities."

continued on page 58

TECHNOLOGY DO YOUR HOMEWORK

You need to know the maximum area to be irrigated. So every project begins with a sheet of paper and some math.



continued from page 56

Once the material takeoff has been completed, the process of locating the prices for these materials begins. Check multiple sources. Keep in mind that the majority of irrigation products are manu-

factured from petroleum. Prices fluctuate just like gasoline. Since large projects may take months or, occasionally, years to complete, take cost variables into "We include an escalating material cost clause that can be tied in to your products and

fuel costs," said Proffit.

Now comes labor. It can kill you. It's becoming increasingly difficult to find and keep quality installation technicians. This shortage means that technicians are moving from company to company more now than in the past. The availability of trained, reliable technicians complicates the process of nailing down true production rates on big jobs. Then, of course, there's Mother Nature. She can be as kind to you as a blue bird or as snarly as a grizzly. Regardless of the care you take in crafting your bid, your labor rate still end up being a guesstimate.

And finally, don't forget your bid bond, your cost and insurance. Know your policy. It must meet the requirements specified in the bid documents.

If you have all this done you're ready to turn in your bid, stop one last time. Check your math again. One decimal point misplaced could spell disaster.

Now you're at the bid opening and you learn that you're the low bidder and have won the job. What does this really mean? It means that you have promised that you deliver a system that can meet the owner's expectations at a lower price that anyone else.

You can be forgiven if your first thought is — "Did I miss something?"

But perhaps that doesn't occur to you and you're excited about taking on that big, high-profile project, the one that you can add to your portfolio.

Never forget, you have challenged the beast and he has lots of tricks. It's to you and your team to grab him by the throat and not let go of him until he's tame. **LM**

— The author is a certified irrigation designer, auditor, contractor and consultant whose goal is to provide water efficiency.

To contact him or learn of the services or products he provides, please visit www.dhwatermgmt.com or email him at lorne1@dhwatermgmt.com.



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