

The Common Problems of Irrigation Installation Projects

Proper communication and planning help avoid mistakes during new irrigation projects.

BY BRIAN E. VINCHESI

Is your golf course thinking about or in the process of installing a new irrigation system or upgrading your old system? If so, you'll want to avoid the common problems of golf course irrigation system installations. Following are a number of things that can happen and suggestions on how to avoid them during an irrigation project. There are installation concerns as well as administrative concerns that need to be considered and watched out for.

ADMINISTRATIVE CONCERNS

Before the project begins, the boundaries of the golf course, easements, underground public utilities (rights of way), and regulated natural resource areas need to be identified and added to the site plan. This is necessary so that they are available on a site plan for permitting and so that equipment is not installed on property that is not part of the golf course. Easements pertaining to gas, sewer, and potable water supplies

require particular consideration, as there are strict construction requirements for working around them.

Identify early in the design process any planned or future modifications to the golf course, including changed fairway outlines, bunker and tee improvements, expanded putting surfaces, etc., so that they can be accounted for in the new irrigation system. You do not want to replace or change any new design work that already has been installed.



Proper pipe burial depth should be maintained throughout the entire irrigation system installation.



Trench settling will be obvious for years, and therefore trenches need to be properly compacted during installation.

Make sure the board understands that an irrigation system is a long-term investment and that they would be wise to account for as many future changes as possible before the new irrigation system is installed.

Local code and permit issues are important to any project and are the responsibility of whoever designed the system. However, as an owner, you want to make sure that all codes and permitting issues have been adhered to and obtained, as non-conformance will become the golf course's liability. Typically, in today's world, some sort of environmental disturbance permit is going to be required for a golf course irrigation system installation.

Communicate daily with the golfers/members about what is going on with the construction via signage, e-mails, or posts to the golf course's web site. Let them know at the first tee or pro shop what holes are going to be closed and where on the golf course they will run into construction. A set procedure should also be in place to deal with complaints. You do not want a situation where anyone can speak to the con-

tractor directly to complain or give advice. Complaints should be funneled through the general manager, the club's (owner's) project manager, or a designated officer of the club. Clearly and regularly communicate to all members, players, etc., the construction process so that everyone knows what is going on

and what to expect so there are no surprises.

Make sure that there is a competent contractor's foreman on site for the entire duration of the project and an assistant foreman with defined and clear lines of communication to the golf course management. The foreman should be responsible for all aspects of the project, including change orders, schedule, etc., so this person can deal with any issues that arise. The foreman should have previous golf course experience and should have installed the selected manufacturer's equipment.

Have the contractor keep a daily written log of progress, which should be copied to the golf course superintendent and other responsible parties on a weekly basis. Keep the contractor on schedule. If they fall behind, find out why and, together with the contractor, determine how to get them back on schedule. Track the number of workers each day. The number should stay very consistent, indicating whether or not the contractor will be on schedule. If the number of workers starts to drop consistently, speak to the owner of the contracting company about staffing requirements and bring the project back on schedule.



Just mounding the trenches and waiting for settling is not the proper installation technique. New and existing grades should be evenly matched.



Proper compaction, in lifts, with mechanical equipment is an important consideration in the installation process.

It is imperative that accurate drawings of the installed system be provided at the end of the project, and, if at all possible, as the project proceeds. The record drawing should be required by the contract and funds should be withheld from final retainage until the drawing is provided and assessed for accuracy and completeness.

It is to the project's advantage to make prompt payments to the contractor for the work completed. Percent of work completed should be paid to the contractor minimally within the contract terms if not sooner. Remember, a paid contractor is a happy contractor.

OPERATIONAL/ INSTALLATION CONCERNS

Make sure that all utilities have been marked by a responsible marking entity. This may include the golf course's private utilities being marked at a cost to the course. You should receive a copy of the contractor's registration number for the marking of any public utilities. Include in the specifications that the contractor cannot start excavating until you have a copy of that registration

number. To prevent down time for the contractor and disasters on the golf course, provide as much information as available for locations of existing irrigation pipe, wires, drains, utilities, etc. Even with good information, existing utilities will be hit and broken. Be ready to deal with these issues in a quick and professional manner. Drainage lines will be an issue. Be prepared to repair them when damaged, as typically the contractor is only responsible for fixing damaged lines that were marked. Damage to unmarked drainage lines is the responsibility of the golf course.

One of the biggest issues with irrigation system installations is achieving the right burial depth for the pipe. The irrigation system designer will have specified a depth of cover for the pipe, for instance, of 16 inches over laterals. The depth may vary with pipe size, depending on the system specifications. Depth is important, as it protects the pipe and wire and makes the swing joint support the sprinklers properly, as well as making sure the system is not damaged by ongoing maintenance operations, such as deep-tine aeration.

Settling can be an issue. This includes settling over trenches and around valve boxes and sprinklers. Settling can be minimized by properly compacting the trenches at the time of backfill. Backfilling should be accomplished in lifts of approximately 6 inches at a time. Mounding up of trenches for future settling or water settling of trenches is not acceptable. Mechanical equipment such as jumping jacks and sheep foot rollers should be used. After trenching on existing turf, getting the grade of the trenches to match existing grade and to have a seamless transition is difficult, but it can be accomplished with good installation techniques and due diligence. A 3,000- to 5,000-pound vibratory ride-on roller can help in this situation.

Electrical wiring in trenches should be installed loosely, with plenty of slack. The wire should not be installed directly off the wire rolls. The wires should be pulled off the rolls first and then installed, because stretched wire raises the resistance and puts strain on the wire connectors. Additionally, plenty of slack should be left at splices



Wire should be laid, not pulled directly off the roll.

and changes-of-direction, allowing for expansion and maintenance. Are fans needed at any of the greens? Electrical provisions can be easily and affordably accommodated when the irrigation system is being installed. Consider incorporating conduit and electrical upgrades for future fan needs into the overall electrical scheme.

Clearly outline staging areas for the contractor to work from, and specify expectations for an overall professional appearance. For example, require shirts to be worn. You also will want to require dumpsters, construction trailers, and chemical toilets to keep from having the golf course's own facilities used, dirtied, and damaged.

The new irrigation system needs to be flushed thoroughly to prevent debris from entering the sprinklers upon startup. The more debris that is allowed to enter the system, the more problems

you will have on startup, and the more maintenance problems will be encountered in the first year.

Do not let the contractor spread out through the golf course. Keep the work contained in as small an area as possible, preferably one hole or less. The more times members or players interact with the construction, the more complaints there will be and the less likely they will be to continue playing during the project. This is no time to lose revenues when this much money is being spent. The installation requirements need to be clearly defined in the contract; otherwise, you will find the contractor working on many different areas of the golf course, doing various things, and never finishing anything.

Trash is always a big problem with a construction project of this size. The contractor's workers should pick up all their trash from the golf course as they

work. This includes boxes, tape, excess wire, bottles, cans, etc. Do not let the contractor use an open trench or hole as a trash receptacle. All trash should be carted off to a dumpster and disposed of in a safe and legal manner.

Restoration is the biggest problem with irrigation system construction. Ideally, a golfer will not notice that new irrigation has been installed. For this to be accomplished, there needs to be a clear set of requirements of what the restored work is to look like. Who is responsible for what should be well defined in the specifications and as part of the contract. Many times a club takes responsibility for some of this work; however, it is not advised, as it just clouds the areas of responsibility and often leads to disagreement.

There are options. Is sod going to be cut, removed, and replaced on the trenches, or are they just going to be

seeded or sprigged? In southern areas, is the bermudagrass going to be grown back over the trenches, or will it be sodded? If seeded or sodded, what is the loam requirement in inches and type? Avoid reseeding or sodding into subsoil. What is the seeding rate and variety? Is a starter fertilizer needed, and what about mulch? Who is providing what, and who is responsible for installing/applying it? If using either sod or seed, who is responsible for watering it, and for how long?

Rocky conditions, poorly budgeted for or not budgeted at all, can make the difference between a successful and a failed project. Rocky conditions take more time to deal with and can have a significant effect on the schedule. Rocks make more of a mess, causing more damage and requiring more cleanup. Worse, rocks make irrigation system installation project costs increase rapidly, so rock quantities need to be carefully projected, documented, and controlled.

Limit the number or completely eliminate the use of vehicles by the contractor on the golf course. The contractor should be using tractors and utility vehicles, just like the maintenance staff. Pickups, vans, and personal vehicles on the course damage the golf course unnecessarily, even if they are staying on the cart path.

CONCLUSION

As with any large construction project, things will go wrong, and in the end not everyone will be happy. However, if you watch out for the common problems mentioned above, issues should be kept to a minimum and most parties will be satisfied with the result. Communication is the key to a project coming in on time and on budget without problems.

BRIAN VINCHESI is president of Irrigation Consulting, Inc., a full-service consulting firm with offices in Massachusetts, Virginia, North Carolina, and New Jersey. The firm has worked on more than 260 golf course irrigation projects nationwide and internationally.



Rock can add significantly to the irrigation system installation cost. These conditions need to be carefully budgeted.