

Irrigation trenching made easy

Discover the secret to installing irrigation—using the proper horsepower for the job.

By RICHARD YACH

Using the right trenching equipment to install irrigation can make or break the successful completion of the job — and even your profitability.

Choosing a machine that's too small to handle the ground conditions and the task may mean you finish late. This results in higher labor costs and added machine repair. Choose a machine that's too large and the outsized muscle may cut a trench larger than what you want and escalate your backfill and compaction costs.

Mike Hubbard, rubber tire trenching specialist for Vermeer Manufacturing, Pella, IA, outlines the five criteria to consider when choosing the right-sized trencher for irrigation installations:

- ▶ depth of service,
- ▶ width of the service line,
- ▶ project deadlines,
- ▶ size of the project and
- ▶ ground conditions.

"If you have an 8-in. water line feeding off a main supply source, and you have to put a bed of pea gravel backfill around it, the trench cut needs to be a full foot wide. This will put you in the 50-hp trencher class right away, especially if the service will be laid four to eight feet down," he explains.

"The depth at which you want to lay the line matters. You can get a smaller horsepower unit to cut a fairly narrow



A landscape contractor uses the the V-5750 when work requires a ride-on model.



Davis Landscaping, Harrisburg, PA, uses a LM-42 to plow in the laterals.

trench — say four to six inches at shallow depths — but at deeper depths, only a larger horsepower trencher will get you the desired productivity.”

The next step, he continues, is to inspect and respect the ground conditions. “You can always go with a smaller horsepower unit if the ground conditions are good. But if the ground conditions will be tough, you need more weight and horsepower — a trencher that’s built to take the abuse that tough ground conditions will deliver.”

Hard rock, hard work

To illustrate, Hubbard points to the Raleigh-Durham Airport, where 77,000 feet of irrigation piping were planted and connected in the rocky ground surrounding it. Crews were from Davis Landscaping Inc., Harrisburg, PA.

For years before the international airport was built, this area between the twin cities was a dumping ground for granite shard blasted away when nearby I-40, the Raleigh-Durham Parkway and other construction projects were excavated. That meant Davis had to plan for rough conditions going in.

Scott Maherg, irrigation manager for Davis Landscaping, describes the conditions that his crews had to contend with.

“North Carolina may be thought of having a lot of red clay, but this airport is the highest elevated area in the center of North Carolina. There is bedrock at the 30-ft. depth mark. In addition, when they

built the roads, the NCDOT left tons of fractured stone backfill at depths up to a foot around the entire airport. That’s exactly where we’re working,” he says.

“All of the contractors that have worked in this area, from fiber optic to the gas-line pipeliners, know that if you bid a job at the airport, you bid it for working in rock.”

The entire irrigation system is run by two different water supplies, one from the drinking water and the other from a 400-gpm pump station that provides water from a lake sitting next to the project.

The pipeline diameters that Davis Landscaping installed ranged from 12-in. mains at the source of the water supplies down to a 3/4-in. diameter for the laterals. In all, there were about 2,000 sprinkler heads installed throughout the 14-mile-long system looped around the airport grounds.

To successfully work the piping into the ground required careful planning and the right equipment. Davis Landscaping brought their 40-hp mechanical trencher up from a Charleston, SC, golf course where it had been used.

“The specs called for the 8-in. line to be surrounded by two inches of crushed gravel backfill, so we needed to make a 12-in.-wide trench up to four feet deep for these main lines,” explains Maherg.

“As the lines progressively decreased in size, we strategically used other rubber tire trenchers in our fleet. The riding trenchers

were used to put in the 2 1/2- to 3 1/2-in. diameter PVC lines, and the lawn plow was used to plow in the laterals.

“The benefits of using the 40- or 50-hp trenchers in these conditions became evident to us,” he says. “If we were trenching and ran into a boulder, we could turn the machines around and use the backhoe bucket to remove the rock and keep our productivity up. But the rock trenching took its toll, as we expected. We wore out chains and buckets of shark teeth getting the rough job of trenching done.”

Lawn plow to the rescue

The innovative use of the lawn plow in these conditions was perhaps the most surprising construction development. When it came to laying in the 3/4-in. PVC laterals, rather than cut a trench 18 inches deep, they used the vibratory plow to pull the pipe in.

“This vibratory plow was capable of pulling in glued 20-ft. lengths of PVC up to 120 feet. This greatly improved our productivity for the thousands of feet of lateral we had to install,” explains Maherg.

“Since the specs called for the PVC pipe rather than flexible polyethylene, we had to use the best method and the right machine to get the smaller diameter PVC in. What allowed us to pull PVC with the lawn plow was the fact that we had many 120-ft. straight runs. And with the runs straight, pulling in glued sticks of PVC was no different than pulling in poly pipe. What we did to lessen ground friction and reduce the chance of the PVC pipe scoring on the trench wall was to place an 1 1/2-in. diameter bullet on the plow blade that gave the pipe added clearance as it was pulled in.”

According to Hubbard, the desired width and depth of trench will always determine what machine is needed. Taking into account the ground conditions — plus a large dose of contractor innovation — also makes a big difference.

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