



The Team (left to right, R. Harrison, D. Plato, G. Acia and G. Mainland) and the pipe puller at Alameda.

How We Cut Irrigation and Electrical Pipe Costs

by **D. GRANT MAINLAND**, Director of Recreation & Parks
and
DENNIS PLATO, Golf Course Maintenance Superintendent

Alameda, Calif., (Population 75,000) has two 18-hole Municipal Golf Courses. The North Course (remodelled in 1967) had all electrical wiring for automatic irrigation controllers laid directly in the ground and after seven years it was causing many problems. The South Course, build in 1956 primarily over a garbage dump and in heavily-alkali-marsh-type soil, had an irrigation system of galvanized pipe and fittings.

The maintenance on the South Course pipe became greater each year until necessary repairs were taking the equivalent of one full time staff person, costly materials, extra care of equipment, and very importantly, great inconvenience to the golfers. In addition, the system did not extend to the degree that it was capable of keeping turf and trees in rough areas alive.

Repairs to the electrical system on the North Course were also becoming a costly operation. There was no real way to determine accurately the

location of a break in the wire due to the great distances between the electrical panels.

During the summer of 1975, in anticipation of the coming rainy season and because of the electrical problems, Dennis Plato, the golf course maintenance superintendent, determined that an inexpensive method of pulling pipe was an absolute necessity. Budget considerations eliminated the possibility of purchase of a pipe-pulling piece of equipment. Plato and members of the golf course maintenance crew decided it had to be done with present equipment and as inexpensively as possible.

To hear Plato tell the story, the labor costs amounted to 11 hours, "One hour of welding and ten hours of planning, thinking, and trying various pieces of equipment."

It was finally decided that the basic piece of equipment was to be the D-4 caterpillar tractor. A blade to be used for pulling the pipe and cutting



The business end of the puller.

through the sod and earth was purchased for \$135. A hole was drilled in it for \$16 and a basket assembly (electrical pull basket) for plastic pipe 1 1/4" x 2" was obtained from the City's Bureau of Electricity. With this, the pulling of pipe was ready to start. One bolt connects the whole assembly.

As noted above, both irrigation pipe (PVC) and electrical conduit can be pulled with this equipment. The ground must be fairly solid so that the tractor treads don't sink in too deeply. Eliminated is the need for cutting and removing sod and the use of a trencher, which means backfilling, replacement of sod and the possibility of uneven ground around the cut after the completion of the project.

The crews found that it is well to glue the pipe the day before the operation. Basically, only two men are needed to pull the pipe once the holes for the inspection box every 200-250 feet are dug. With the aid of an auger (which was not available at the Alameda Course), it is estimated that ten hours labor on each fairway could be saved! One man runs the tractor while the other connects and disconnects the plastic pipe.

Following the pipe placement, the tractor operator backs up over the small cut in the sod and pushes it back down with the tracks of the tractor. Within a very short time the marks are nearly invisible and the sod is back to normal. With a trencher operation this is impossible.

We have determined that this pipe puller can

pull as much as 8,000 feet per day under ideal conditions. Under normal conditions, 4,000 feet can be replaced in a working day. When working around tees and greens and making 90 degree turns, the process slows somewhat primarily due to the need to be centered over the main line.

With this equipment, old pipe and other obstructions are cut through readily and do not slow the operation.

As of now the total electrical system for the North Course irrigation system has been placed in plastic pipe (4,000 feet) and 6,000 feet of pipe has been pulled for irrigation on the South Course. This has completed three fairways, and a new gate valve system with controlled heads has been placed around five greens.

As time and weather permits, it is planned to complete this process on the remaining nine fairways where replacement is a necessity and on all greens on the South Course. This will be the first step in the eventual automation of the South Course irrigation system. In addition, the Driving Range is planned for remodelling and a completely new irrigation system will be installed by the city golf crew.

Alameda is convinced that the time and money saved, the simplicity of the operation and the ingenuity of the golf workmen has been instrumental in making Alameda's Courses two of the best in the area; something that is borne out by the increase in play and the comments of the golfers.



For less than \$200, ingenuity fashioned the pipe puller.