



Figure 1.

## Sump Pumps for Unusual

**A**t the Picatinny Arsenal Golf Course, Dover, New Jersey, a severe drainage problem existed on two holes and desperately needed correction. Surface runoff water collected on two fairways and would not percolate through the heavy humus soil. In fact, the area became so wet it was impossible to carry out fairway mowing with the seven-gang units at certain times. Green Chairman Frank Ferry, Superintendent Michael George and Engineer John Klusick went to work on a solution.

On the 13th fairway, a hole was dug large enough for a 50-gallon drum. Holes were made in the side of the drum and crushed stone placed around the outside of it. Direct burial cable was snaked through existing drain pipe from a 110 volt electric meter cover duplex outlet. An electric sump pump was installed into the drum casing with the two-inch discharge plastic pipe connected to the existing six-inch drain pipe which emptied into a brook. The water table is maintained approximately two feet below the fairway from January through December. The fairway became firm providing mowing with the seven-gang equipment and gave a playable fairway.

A green plastic packing material was secured to the lid of the 50-gallon drum with adhesive to provide a normal bounce should a golf shot land here. The estimated cost of the project is less than

Figure 2.





Figure 3.

## Drainage Problems

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Figure 4.



\$500. (See Figures 1 and 2).

On the 14th fairway, a similar hole was dug for another 50-gallon perforated drum. Crushed stone was again placed around the outside of the drum casing. The area was regraded to the sump hole. Electricity was not readily available. A four-inch irrigation line with a 1/2-inch riser to a self-closing sprinkler valve ran adjacent to the sump hole. A water pump was purchased (hydraulic cellar drainer) and connected to the irrigation riser, an 1/2-inch plastic rain pipe was extended from the water pump to an existing drain pipe adjacent to the fairway and piped to the brook. The system is used during the golfing season, during rainy weather or if irrigation water runoff enters the sump hole, the float is lifted by the water pressure activating the irrigation water through the ejection valve providing suction to the drain pipe. As the surface water in the sump is lowered, the float descends to the normal position shutting off the irrigation water and the water level is approximately two feet below the rough grass area.

This installation also cost less than \$500. (See Figures 3 and 4).

The Green Committee has received favorable comments from the Membership on the improved appearance and playability of these fairway areas.