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DRAIN

**Drainage Consultant Barry F Cooper
discusses some of the interesting projects
he is currently involved in and gives some
helpful advice on the subject**

When I was asked to write an article on golf course drainage I had to sit and think very hard on how to condense such a vast subject into approximately 1,000 words. I thought the most sensible approach was to relate the story behind the design of the drainage scheme on two of my current projects which are both very much out of the ordinary when it comes to drainage problems.

The first major project I was involved in this year was the drainage of the new National Golf Centre at Woodhall Spa.

I knew the existing course fairly well because the club are clients of a drainage contracting company of which I am a Director. Having taken many soil samples from the existing course I thought the new project would be very similar and quite straight forward to drain, how wrong I was.

Half of the site was open farmland and the other half was planted with commercial conifers which were ready for harvesting.

I spoke to the outgoing farmer, and he informed me that at least four attempts had been made to drain the open land which was still extremely wet. My heart sank, but at the same time it made me realise that my investigations into this site had got to be even more thorough than usual, and two men with soil augers some 1.2 metres long proceeded to take up to 200 soil samples from all areas of the site, and the findings were remarkable.

The open farmland where previous drainage schemes had failed was found to have approximately 900mm of heavy clay soil overlying sand, and as none of the previous attempts at draining the land had laid pipes at a depth greater than 800mm it was clear to me that deep drains laid in the sand would be required and in fact this part of the contract is now complete. I am just keeping my fingers crossed now until the system has had a fair test.

In the woodland area before the trees were harvested you

would have thought that the whole area was as dry as dust, but once again the men with the soil augers came to my rescue, finding running sand overlying clay in some areas and pockets of very heavy boulder clay overlying sand in others.

After studying the results of the soil samples it was decided to design a system of lateral drains laid at 1.2 metres deep over the whole site at spacings of 15 metres in most areas and 10 metres in others where the running sand was found.

I relate this story to emphasise how important it is to examine the whole site properly rather than make dangerous assumptions.

The site in general is fairly flat and a comprehensive level survey had to be undertaken. This caused a few problems in the woodland and we were restricted to taking a series of levels along all the woodland rides. All pipes being laid on the site are filter wrapped to prevent ingress of sand and because of the amount of water present, even after this summer no pipe is smaller than 80mm diameter. This story also illustrates the folly of laying shallow drains on golf course sites.

The only time I would ever go along with shallow drains is on a land-fill site that has been turned into a golf course.

When assessing the drainage requirements on some golf courses investigations sometimes have to be carried out several hundreds of yards outside the golf course boundary to determine where the best possible outlet should be.

These courses are usually very flat or are links courses affected by tidal conditions I am, at the time of writing, designing a drainage scheme to alleviate problems being experienced on the 13th, 14th and 15th holes at West Lincs Golf Course, where areas of silt are causing problems. The outfall to all three fairways is a 900mm storm water pipe emptying into the Irish Sea.

GAME

A comprehensive level survey has been undertaken to determine the feasibility of draining these areas as at first sight it would appear that the 13th fairway is totally land locked by very large sand dunes. However, after studying the levels, it emerges that if a three metre wide swathe is cut through approximately 50 metres of dunes to a depth of the patch of silt and the area around an overflowing pond can be drained very easily, with the swathe through the dunes being reinstated afterwards.

These areas have been causing problems for some time now and I am sure Head Greenkeeper John Muir will be relieved the problems can be solved.

Recently I was involved with a feasibility study on some very flat land adjacent to the Somerset levels. Once again a comprehensive level survey was undertaken, but this time the outfall was into

a tidal river, which as you can imagine poses problems over and above the norm.

I now propose to try and help greenkeepers on inland courses identify probable causes of drainage problems on their own courses.

If your course has a heavy clay sub-soil don't despair, because this is the easiest type of land to drain, much easier than sand and clay mixed, as the Woodhall Spa experience is proving. Stand back and study your own golf course. There may be parts of one or two fairways that are very wet during the winter and other parts of the same fairways that are perfectly dry.

Picture in your own mind, could the fairways in question have been two different fields at some time in the distant past?

Is there a tell-tale line of mature trees across the course that could have originally been in



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DRAIN GAME

a hedgerow? If there was a hedgerow there, it is almost certain that at some time there would have been a drainage ditch there as well.

Was the ditch piped properly or was the golf course constructed during a dry time when the ditch was assumed to be dry? A very dangerous assumption as I am sure many Head Greenkeepers are finding out after these last two winters.

All fields, even in the same area have not all been drained at the same time, and the scheme that drained the field which contained the wet parts of the fairways has ceased to function, while the scheme that drained the field containing the dry part is still working. I mention this because it may help you to make logical assessments regarding drainage on your own course and also impress your Green's Chairman.

If you are fortunate enough to

be employed as Head Greenkeeper on a new course being constructed keep your eyes open to prevent the two main mistakes being made during construction which are as follows:

When a green is constructed the base of it sometimes comes from an area all around where it is sited. The top soil is stripped and then sufficient sub-soil is "borrowed" to build the base. As we all know the surrounds and approaches are a vitally important part of the golf course and sometimes the natural drainage of them is destroyed at the outset. It is much better to import all the green base materials from a "borrow pit" not in an area of general play.

The second major sin is to ignore existing drains during construction work. Broken drains cause absolute chaos during the winter months.

To all greenkeepers undertak-



Drainage work being carried out at BIGGA's HQ, Aldwark Manor

ing "in house" drainage work this winter, I wish you all the best, and should you need any advice I am only a phone call away.

■ Barry Cooper is a golf course drainage consultant based in Market Harborough, Leicestershire. Tel: 01858 46684.



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