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Now's the t

Some thoughts on golf course drainage, by Barry Cooper

It's that time of the year again when the thoughts of Course Managers and Head Greenkeepers turn to draining parts of their golf course.

The only snag is that for many of them it will be much too late to have any work undertaken this autumn, either because the weather will break or their chosen contractor will already be fully booked for this year. I feel very strongly about this, and in my opinion the autumn and winter periods should be used for assessing drainage requirements and not installing systems that have probably been designed during dry weather in the spring and summer months.

Some will be lucky and have their systems installed before the weather breaks, but some will not be so lucky and the temptation to just try and get that little bit of extra drainage installed will cause

a horrendous mess to the surface, which in itself will negate the effect of any new drainage for up to a further two years. With this in mind I will now write about the importance of scheme design relating to depth and spacing of drains in relation to various types of sub-soil.

Let me say right at the outset that I am well known for designing deep drainage schemes and apart from when dealing with re-instated land or land fill sites I would never advocate laying any drains at all shallower than 750mm or 2'6" in old terms.

When you are assessing the drainage requirements of your course, try and picture the golf course as it was in the past, with many hedgerows or stone walls. Hedgerows were usually planned to define distinct sub-soil changes, on one side of the hedge the farmer's of yesteryear could cultivate and sow what was lighter land than on the other side of the hedge which was much heavier

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Time to tackle drainage

land. These observations are very important, because the lighter land, ie sand and gravel will require draining at a greater depth than the clay land will.

Many of you will have heard me say before that heavy clay sub-soil is the easiest type of land to drain. I have had no reason to change my mind about this, and the reason that it is easier to drain, is because the water in this type of soil is pretty uniform, being held in the many fissures in the clay. Many people believe that there isn't a water table in heavy clay land, but I can assure you that there is.

I would be the first to admit that water obviously doesn't move as quickly through clay as it does through sand and gravel or indeed some of the silty sub-soils, but move it does and the water table has to be kept at least 750mm from the surface to create a well drained golf course. If a golf course with a clay sub-soil has been waterlogged for many years, the fissures in the sub-soil will have become sealed and the clay will have become what I call dense. Under these circumstances after the pipes have been laid in the ground at the requisite depth, secondary treatment, ie: mole draining on existing courses or sub-soiling on courses under construction becomes of paramount importance in order to help recreate the sub-soil structure that is 50 important in a clay soil. If the areas on a golf course built on clay are fairly flat with up to two percent fall on the land

I would suggest that a system of lateral drains should be laid at 15 metre centres at 800mm deep, followed by mole draining at two



Drainage work in progress at Mill Ride Golf Club

metre centres at 450mm deep at right angles to the pipe drains. The pipe drains should always be laid across the steepest fall on the land in order to get maximum interception. This in turn automatically means that the mole drains will be laid up the steepest fall, which means they will empty quicker and last a lot longer. If the falls are particularly steep, the depth and width of drains will have to vary accordingly.

The depth of drains becomes more crucial on lighter sandy soils and more preparatory work must be carried out before designing the drainage scheme. First of all the reason why an area of mainly light soil is so wet. Is it overlying clay? Is it an area surrounded by clay, or is it an area close to where sub-soil stratas change. To answer these questions will mean excavating many trial holes, or as we occasionally do taking many auger borings down to at least 1.2 metres deep. This last method was used when I

designed the scheme for the new National Golf Centre at Woodhall Spa. It was fortuitous that my staff and I were as thorough as we were, because in some areas heavy clay was overlying sand, and the farmer had already made four attempts to drain these areas without success. These areas have now been drained at 1.2 metres deep with mole drains laid in the clay cap as previously described, and the area is now draining well. One thing must not be forgotten regarding golf course drainage, and that is it does not matter how many drains are laid under the surface, they will not work efficiently without the surface itself being looked after properly with the grass roots being encouraged to penetrate ever deeper.

I have recently been involved with installing a very deep drainage scheme at Royal Liverpool Golf Club where a Pumping Scheme had to be installed to drain one area. The whole of the

golf course is pure sand. You may think that if it is pure sand, why on earth should it require draining? The reason in this case is because the water coming from inland is being blocked by the Irish Sea. The sand is full of water from approximately 900mm deep and the drains we installed at 1.5 metres deep are pouring water out. This water at the time of writing this article is pure, but I would bet that in time the salinity will increase as the inland water is reduced. I have written about the importance of scheme design: ie: depth and width of drains, now for a few words on the importance of Outfalls. On very flat links courses satisfactory outfalls have to be looked after way beyond the boundaries of the golf course and failure to do this will result in serious problems having to be overcome in future years. Last year I designed a drainage scheme for Royal Birkdale and when I inspected the 15th, 16th and 17th holes, which occasionally lie very wet, I found that the original natural outfall was a ditch which now runs through a nature reserve and because drainage is a forbidden word to some so called conservationists a machine would not be allowed into that nature reserve to maintain that outfall ditch and this will result in costly diversion of the water from these holes. Exactly the same problem has arisen at Parkstone Golf Club in Dorset, so please, if your golf course is flat look after your legal right to remove water from your land naturally.

However should any of you need advice as I always say, I am only a phone call away.

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