

Drain or Drown

David Shelton grabs his umbrella as he looks at the advances in drainage techniques.

The very mention of installing drainage on golf courses conjures up for many pictures of upheaval and disruption lasting weeks or even months. It was not that many years ago but drainage technology and equipment have made rapid strides in recent times. Disruption is too strong a word to use, inconvenience would be more appropriate and is now measured in days.



A Supertrrencher installing a 80mm diameter piped drain. There need be no disruption. The trailer has to spread the weight and the 4 wheels in line protect the turf

As with so many facets of modern living, technological developments have reduced costs overall rather than increased them. The approach to installing drainage has to change too. Beloved by the senior member of the Green Committee the herringbone layout, which he remembers from his younger days, has no place on today's fairways. He would frown on small diameter pipes, not realising that they may be more effective than pipes two sizes bigger.

As an example let us consider the drainage of a fairway and green that has many wet places during the six months of winter. The grass is noticeably poorer in the very wet areas and on the greens, such much so that a temporary green is generally in use. The members are not happy and the greenkeepers complain of equipment getting bogged down. The consensus of opinion is that the very wet patches must be drained.

It's decision time! Is it to be an overall scheme or just in selected areas? Time and time again I hear stories of how one wet area was successfully drained only to find another wet area appeared a little distance away. So

frequent are these happenings the only way to please everybody one has to be by formulating an overall drainage scheme.

As a general rule, the lateral drains will need to be a maximum of 10 metres apart across the fairway. They will probably be 60mm diameter land drainage pipes, installed snugly in the trench which has been dug 78mm wide. The depth may be of the order of 500-650mm. No permeable fill is placed under the pipe but will be placed over the pipe and brought close to the surface.

These pipe trenches may be topped with free draining sand, or a free draining loam based compost, which is then seeded. Better still is to turf over these 60mm wide scars with matching turf. If there is no natural fall across the fairway then the laser-guided trencher will ensure that the pipes are laid on a suitable gradient. These laterals in turn will flow into a main drain sited off the closely mown area. In this way the connecting sites, which cause the biggest scars, are less conspicuous. Nowadays drainage water is too valuable a product to waste, so the designer should consider where and how best it could be stored.



Fastflow 3 tonne capacity gravel backfiller places permeable fills at fast walking pace; no spills, no wastage

Depending on the annual rainfall, the pattern of that rainfall and the soil types, pipe spacing of 10 metres may not suffice. The spacing can be reduced to seven metres or even five metres but the budget may not allow this. Hence it is commonplace to superimpose a secondary drainage system over the piped system in those areas that are particularly wet. To spread expenditure this may be done at a later date.

Of the several secondary systems from which to choose lets concentrate on three. Slit trench drainage, synonymous with sand slitting, consists of 50mm wide trenches 250mm deep and spaced two or three metres apart. Running at approximately 90 degrees to the drainage pipes they are backfilled with gravel and topped with sand. They are effective but have drawbacks in that they leave noticeable scars down the fairway. They may need topping-up once, twice or even three times, which not only adds to the cost but also more importantly delays the rehabilitation process.

Should one purchase the specialist equipment and do it yourself or should one use a specialist contractor? What about hiring in the specialist equipment or hiring with skilled operator? Every drainage scheme is different and the various alternatives should be considered at the planning stage. One route that finds favour with those on a tight budget is to engage a contractor to install the pipes and hire or purchase equipment for the secondary drainage.

Do not underestimate the amount of materials that have to be handled. In digging a trench 200 metres long, 110mm wide and 600mm deep, 13.2 cubic metres of soil are extracted. In the loose that is approximately 20 cubic metres. In weight terms, of the order of 20 tonnes, this has to be handled and carted away in less than an hour. This trench has to be backfilled with permeable fills totalling a similar gross weight. If the trencher is laying pipe while it digs then 40 tonnes may be handled in under 60 minutes.



Gravel Band Drainage - equally effective on a green as on a fairway



25mm land drainage pipes fits into a trench narrower than a golf ball



Carrying out drainage operations in the winter months and using trailers with unsuitable wheels and tyres can easily rut fairways and surrounding areas. Undertake drainage in the drier months.

Now that waiting lists and joining fees are, for the majority, a thing of the past the golfing fraternity naturally move to the better drained courses. To remain viable golf courses on the heavier soils have to make good drainage a priority. With today's low rates of interest taking out a loan for such improvements can be a cost effective option. So what are you waiting for?

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