



An overall view should be taken on upgrading work, particularly with drainage system improvement

DRAINAGE DECISIONS

Now is the time to start planning for drainage improvements. Wrong end of the winter period? Not at all. The recent wet weather has brought back for many the easily forgotten memories of heavy going which, for some, date back to real winters of several years ago.

There is nothing to beat a good monitoring period over the winter when areas can be marked on an accurate plan and studied for possible causes. Vital bits of kit include a spade for the bold or a turf repair implement for the tentative, with a dutch auger to examine soil conditions to depth. Oh, and of course two coat hooks, watering can, bin liner, and wellies (waders?) to men-

tion but a few of the specialist instruments of the trade. Wellies to get you into the ditches or water-courses where everything starts or finishes, depending on your point of view; the bin liner to leave a tidy turf surface; a watering can to crudely study sub-surface permeability. Coat hooks? – easily fashioned into an amazingly informative drain detector (send sae for details!)

An occasional examination, noting as much as is reasonable on what happened where and when following heavy rainfall or steady drizzle can be invaluable to the detective work that determining the cause of a problem can often become.

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Types of problem

On an established course, the first question asked should be 'are we dealing with an increased usage or similar surface condition problem, or with a deeper problem? Or both?'

Draining a straightforward compaction problem caused by many more feet passing over the surface is a waste of time, as is spiking turf over a high water table. One is a soil problem, the other a water problem, although inevitably one affects the other. Pipes do not last forever: they block with soil, roots, dead rats even! They settle through subsidence or soil shrinkage, or may be damaged, shallow clay tiles especially. They become overloaded as additions are tagged-on over the years. This overloading or surcharging can cause a problem some distance from the source. For instance a new surface drainage system which intercepts what was surface run off into the pipe could cause headaches as gradients fall.

Water flow or hydrology can change, although recently the tendency has been for these effects to reduce – with springs or seepage lines disappearing, though not forever. Rising water levels at the main outflow end, due perhaps to sedimentation on or off site or increased run-off upstream are more likely offenders. Suffice to say that a wide ranging approach is needed at the problem examination stage if the resulting options are to be in any way reliable.

Planning a scheme

Whether the proposed work is large or small in scale, careful planning is always worth the effort. Much may be at stake, not least the reputation of those involved in organising on behalf of the club or management.

Timing and logistics should be thought out in detail to minimise



Quick and painless: with good planning, drainage improvement is not such a major job after all.

Picture courtesy of White Horse Contractors Ltd

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the inevitable disruption which must occur to a greater or lesser extent with any work. Various 'windows' in the usually busy annual calendar of a course can be identified and those occurring at the favourable times of year earmarked. Unfortunately the best conditions for work and the busiest time of the year often coincide. Let us not forget also that the best laid plans of mice and men are always at the complete mercy of the weather.

We can at least attempt to make any drainage work as efficient as possible from the organisation and design point of view. Without going too deeply into the design aspects, it is worthwhile taking a look at how design can affect installation unfavourably.

There are only rare occasions when there is really only one option available to either solve a problem or lay out a new system. Finding the right one is not always a simple question of cost: it may be more to do with minimising disruption in terms of time taken to do the work

or the effect on the course itself.

Design

Take for instance trenching, the core of most schemes. Width, depth, and excavation difficulties need to be addressed. All displaced soil has to be handled, probably removed. Anything which can be done to reduce volumes involved helps efficiency, eg. smaller pipe size = narrower trench. Designing for minimum volumes, both of soil removed and permeable fill brought in, is very important; but it cannot be of any detriment to the required drainage capacity of the system. Additionally, when 'trimming' a design, a thought must always be given to the equipment that is going to be installing it.

You may be specifying a system which requires several machines where one would do, or a machine which is not easy to locate. Digging-wheel type trenchers have a width and depth restriction, generally 50-75mm and 600mm respectively. Chain trenchers similarly cannot

generally go much less than 80-100mm wide, or much more than 150mm. At the greater widths and depths it is not easy to find a machine which can elevate soil directly into a trailer and thus soil handling becomes a problem. Deep drains, sometimes necessary for seepage lines, represent such a problem. The author has seen an ex-NCB loading shovel make an almost perfect job of lifting soil from a turf surface, following deep drain installation on a fairway, but who has the nerve to recommend this on their course! To avoid this type of problem the design might be adjusted. Is it possible to install two 150mm outfall points rather than one 300mm? Once out of even a large trenchers' capacity, a simple job can become a civil engineering exercise.

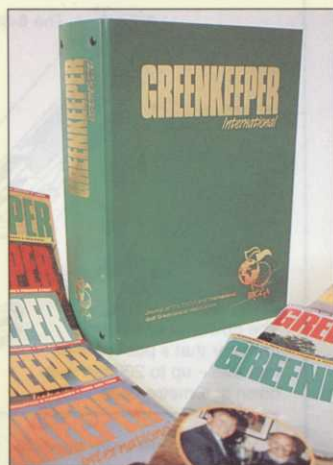
Design must carefully take into account gradients too. It is possible to 'grade-through' a hump or hollow, but the trenching depth capability becomes critical, as does an accurate means of levelling, ie. with well set-out boning rods, or → 46

Magazine binders: good sense and great value

A well-worn phrase borrowed from the world of antiques and collecting – today's disposable is tomorrow's collectable – is really a warning not to throw things away. If you doubt such wisdom, think how valuable an early version of the simple hand mower is today.

But there's more to the whole question of keeping things than mere profit. For writers, researchers, lecturers and all practical exponents of business; art; craft or science, the most valuable source of information is the magazine, especially those from days long past.

This applies equally to the magazines of today, and a visit to the office of most head greenkeepers will usually reveal well-



thumbed copies of even the most current issues of trade magazines, often stacked neatly with the good intent of keeping them

for posterity.

Sadly, these copies often get mislaid, damaged or 'taken away' and what began as good intent can end as infernal frustration.

With that thinking in mind, and conscious of the fact that the bulk of serious articles appearing within the pages of Greenkeeper International offer the means by which greenkeepers may return to a feature of particular interest – perhaps to refresh the memory on a well established though perhaps little-used technique or to merely confirm an understanding of a given method or philosophy – your Association have commissioned binders for your copies of Greenkeeper International.

This move to provide additional services to readers and

members can be witnessed in the provision of these clever binders, produced in the Association's green livery, stylish and convenient, and emboldened with the BIGGA logo on the spine.

On Page 11 of this issue you will find an advertisement for these splendid binders, priced at just £5.95 each or £10.90 for two – enough to keep 24 issues from the ravages of time.

Take a leaf from the antiques world, save it while you've got it, collect your copies of Greenkeeper International in these binders, complete with a useful index card for you to personalise. In doing so you will make them the basis of a useful reference library, whilst creating a collectable for future generations.

44 → (now more probably) with laser equipment linked to the hydraulics of the machine.

Many mistakes are made on the backfilling stage, often resulting from the design or specification. It is not necessary, for instance, to lay a normal drainage pipe on a bed of gravel or to support it on either side. I view this as a waste of effort and materials. It is not always necessary to fill a trench up to the same level with permeable fill. Up to the surface where surface water interception is required; at 100-150mm deep where connection with the topsoil layer, or a slit-groove system may be useful; perhaps none at all where the pipe function becomes water carrier rather than water collector. Remember too that it is possible to get unperforated pipe for this function, where sediment and root ingress is a possibility.

The topsoil finish to a drain presents difficulties too. Most excavating equipment has to remove all soil and replacing a proportion of that soil means most probably a separate operation, placing what is essentially subsoil on the surface – this is not desirable! A sand finish is often chosen over the permeable fill but many do not like the effect during dry weather, with drought induced yellowing lines appearing easily.

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Furthermore, check bridging factors to avoid sand migration.

Summarising on the design aspect suggests a simple logical sequencing of what, how and when, thus avoiding the embarrassing if not disastrous afterthought.

Installation

I begin this section with an announcement to new course developers: put the most comprehensive system in now whilst the shackles are off, it pays in the long term. Big machines can be used with impunity, high work rates, low costs. The so-called trenchless drainage option is there, materials can be hauled around the site with regard only to caring for soil conditions.

Once the course is sown or (even worse) being played, material carting can become a nightmare. Excavating the turf is strictly taboo, interfering with the status quo, albeit a damp one, out of the question. Well okay, that's a bit strong, but better to avoid such problems at the construction stage. Even without

this there are often quick, effective ways to install remedial or new drainage systems which avoid the protracted struggles of green chairman and greenkeeper alike. The techniques and equipment do exist for all sorts of apparently unusual conditions, situations and requirements.

The actual installation work is made much less traumatic if everyone knows what to expect: what is involved, how long it will take, when will the after-effects be gone etc. Weather unfortunately could be the biggest and unavoidable trauma of all. Provisional plans for alternative access routes, material drop-off points, lower ground pressure equipment, are sensible for critical schemes. The budget should also cover other weather effects such as standing time: hire costs; extra transport costs, even track-laying or returfing work.

Hopefully this article has clarified the position to some extent. Drainage work is pretty straightforward if planned properly. There is nothing wrong with the piecemeal

approach – of phasing work and gradually intensifying a system, patching up as required – in fact there is much to commend it. But if this approach is taken in hope rather than through calculation you may just possibly be prolonging the agony unnecessarily.

The benefits? Better turf wear, less disease, happier golfers, confident greenkeeper, less input/ higher output, bulging coffers! Well perhaps not bulging, but the financial potential is there.

Finally, as a last general comment, take a step back from the course occasionally and look objectively at the potential for major improvement work. Look at drainage; bunkers; landscaping; landform, tees and greens – and ask yourself if piecemeal improvement is the best way to raise the profile, to fend off competition or improve finances?

Highly skilled though most greenkeepers are, there comes a point where development plans outstrip staff capacity. In these cases, short-shrift could be made of such plans with the effective use of outside help.

■ The author, David Hemstock, is an independent consultant specialising in golf course development and upgrading.

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