

A QUICK GUIDE TO...

GOLF COURSE DRAINAGE



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with this month's
edition of top tips...



Importance

Drainage should be an important consideration at all golf courses and, especially for those situated on impermeable clay soil, a properly designed, correctly installed, accurately recorded, and well maintained drainage system can be the key to a successful golf club.

Topographical Survey

A typical 18-hole course may cover around fifty hectares and to properly understand actual or potential waterlogging problems it is necessary to appreciate how water moves onto, across, and off the entire course.

Knowledge of surface contours is essential and a professional topographical survey will provide this data; and a range of other information to aid general management of the course.

All existing water courses (streams, ditches, ponds, main carrier pipes, etc.) should be plotted to enable an assessment of the existing arterial drainage system.

Arterial Drainage Improvements

Using the survey results in conjunction with physical site investigations a competent designer may suggest improvements to the arterial drainage system which can either be features within the course itself (new ponds, open ditches, etc.), or can be implemented less obtrusively using large diameter buried pipes and hidden water storage, from which drainage water could be re-used for irrigation.

Fairway Drainage

Each individual hole can then be assessed in terms of drainage requirements. The main factor determining the overall cost

and effectiveness of a golf course drainage system will be the spacing of the lateral drains on the fairways.

On clay soil five metre spacing is fairly typical.

The most commonly installed lateral drains are 60mm or 80mm perforated plastic pipes though modern alternatives such as geotextile-wrapped fin drains are increasingly popular.

Lateral drains connect to 100mm and 150mm plastic carrier pipes which, in turn, feed into the arterial drainage system.

All drains must be laid to correct falls (minimum 1 in 200) and the use of modern laser-guided trenching equipment can greatly assist in achieving this.

Fairway drainage does not generally need to be deep, with 450mm being typical for plastic pipe laterals.

The use of quality drainage aggregate above the laterals is vital: clean 6mm gravel is ideal and widely available.

It should be brought to within 100mm of the surface, and be topped with an appropriately matched sand or rootzone (see STRI grading curves).

Greens and Tees

Many UK courses have clay-based greens and tees which can be prone to severe waterlogging.

Whilst some, like Wentworth recently, have resorted to a complete greens rebuilding programme, most clubs do not have the necessary finance available.

Fortunately, good quality professionally installed greens drainage systems are available for around £5k per green which, whilst not matching the performance of a USGA green, will transform the playability of greens during winter.

Bunkers

Bunker drainage can sometimes suffer because some course designers fail to realise the difficulty of finding suitable outfall points for deep bunkers.

The installation of bunker drainage is one area where 'in-house' installation can be cost effective compared to using outside contractors but, as with all drainage, it is essential that pipes are laid to correct falls.

Miscellaneous

- Once designed, a new golf course drainage plan can be implemented over several years to spread the cost.
- Greenkeepers' machinery access routes should be included within the areas to be drained.
- Pathways from tees on some holes can be considered to reduce the overall area where drainage is required.
- Trees should not be planted within six metres of drains and species with far-spreading fibrous root systems, such as Poplar and Willow should be avoided altogether.
- Irrigation pipework and other underground services should not be installed without considering if existing drainage could be damaged as a result.
- The maintenance of accurate drainage plans is crucial.
- A comprehensive programme of aeration and decompaction is essential to maintain

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