



On the beach

Murray Long explains how bunker construction and maintenance is carried out at Sunningdale

Bunkers are up there alongside golf greens as one of the most emotive subjects in the bar after a game of golf, or in a greens meeting! In the same manner as golfers would say the greens were too slow, bumpy or soft, they would also say, “My ball was plugged! There was no sand! There was too much sand!” etc.

They are a hazard! Therein lies the problem; how much of a hazard should they be? Certainly not the hazard they used to be when they were formed from rabbit scrapes in the dunes or sheep sheltering from the howling wind or rain hundreds of years ago. Even on from that, at the turn of the 20th century when Harry Colt started building bunkers whose bases were not evenly bowled, bases were fluctuating and

sand could never be kept evenly distributed over the bases or faces as gravity would play its part and sand levels would be inconsistent. After all, bunkers were designed as a hazard!

The modern day bunker is somewhat different. A more manicured approach has developed with edges having to be defined to clearly mark the hazard, even sand levels so that you get the same lie where ever your ball lands. The best players in golf would much rather land in a perfectly raked bunker if they miss the green, where they can get a clean strike and achieve some spin to stop the ball, as opposed to a ball sitting down in some clumpy rye where anything can happen.

With the current economic climate, things may well be heading back towards more unmaintained

hazards. There are certainly a lot more golf course designs coming out of America with a more rugged appearance, but you can still be sure we greenkeepers will be put under pressure to maintain our bunkers to achieve consistency, as

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I have yet to hear a golfer say “It was ok, I thinned it, I was in a hazard!”

Some of the best bunkers I have at Sunningdale don't have any drainage installed. Four out of a total count of 154 lie over a free-draining sand rootzone that has little or no



ABOVE: Range of photographs showing new Course bunkers under construction

stones. This is the ideal. I wish this ratio was higher, but it does give some indication of what is needed in a good bunker!

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In my opinion, we need to apply some of these principles in order to produce good bunkers that actually reduce the level of maintenance required because they're constructed well from the sub base up.

On many sites, the sub base can vary substantially across the course which will have an effect on the sands performance, so we have to create some consistency, starting with a good drainage system ideally leading to a positive outfall and adequate pipe size to maintain a

reasonable flow of water to prevent flooding.

Flush points can be fitted to the drainage system by carrying the pipe up and out of the bunker to a convenient place close to the edge where it can be fitted with a cap to allow flushing prior to winter heavy rains ideally just before drain down. These flush points can also be used for rodding should blockages occur.

Another option can involve fitting a piece of twin wall pipe with a solid base into the drainage line so it acts as a silt trap.

This would also have a solid removable lid ideally six inches below the finished level of the sand to avoid damage from clubs.

They can be handy access points in times of severe flooding to get water quickly to drainage. It also

helps to make them large enough to drop a bunker pump into, to act as a sump in the worst case scenario.

If a soak away is your only option, try to construct it outside the bunker with enough storage capacity to take all the water a bunker is likely to take, far enough away to avoid water backing up the pipe. Again, twin wall can be built into the soak away large enough for a bunker pump to be dropped in should it become full.

Making the sub base as solid as possible and sloping it towards drainage, ensures water can be quickly evacuated.

The biggest problem affecting bunkers is contamination. The more you can prevent it, the longer the bunker will last and perform effectively. Contamination comes in a variety of form from different



sand/grit will help identify when levels are in need of attention.

Liners are also a good option between the drainage layer and the sand. There are many options available, but ideally look for a lining system with the following qualities.

It should be permeable so water can travel through to drainage. It should also be able to withstand impact from golf clubs and not rip or chip, as in the real world, sand levels fluctuate and at some point a golf club will come into connection with the liner. It should also be able to expand and contract with varying soil conditions in summer and winter and should ideally improve sand holding capacities on bunker faces.

Choosing the correct bunker sand can be a minefield, but good advice is available from your agronomist and reputable suppliers.

When it comes to bunker maintenance, different raking techniques can be used to help you achieve your

ABOVE: bunkers before and
BELOW: after re-construction



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areas and there are a number of solutions.

Contamination from the sub base may cause stones, rock or chalk to mix with the sand, which pose a potential risk to golfers if they're struck. They can also land on the putting surfaces where they can cause damage to mowing equipment.

Once we have installed good drainage systems, they can become blocked by silts, so it's important to make sure we have the correct gradation of particles from the course drainage aggregates to the fines of our sands. Drainage aggregate can also become a pollutant if sand levels are not maintained and the gravel comes up into the sand.

The edges of the bunker are also an interface between the soil, turf and sand. Stones can encroach from the edges of the bunker, but probably more troublesome is the soil that can be washed in, changing the drainage characteristics of the sand.

Placing a small revetment of about three turves around the edge of the bunker gives good definition and acts as a good barrier to prevent

this occurring.

Contamination from areas outside of the bunker, such as grass and leaves, can be easily dealt with by simply blowing bunkers out prior to raking or after maintenance practises.

The key to achieving good consistent bunkers is to create similar conditions throughout the golf course in different environments, and an effective sub base and drainage is a good start.

In order to minimise contamination to the sand from the base or the sand and silts to the drainage we need to create a bridge or blinding layer between the sand and the drainage. This can be done in a number of ways.

A layer of coarse sand or grit can be put over the entire base of the bunker creating a barrier between troublesome sub soils and the sand. The important thing to remember with this is that the layer has to be thick enough to stop movement upwards but also of the right depth and particle size as to not restrict drainage. Sand levels must be monitored. A distinct difference in colour between the sand and coarse

goals. Softer sands may need to be flat raked to minimise plugging or try using rakes with shorter teeth. Flat raking around the outside of the bunker improves the chances of the ball coming to rest in the bunker base and not on the face. Varying raking directions helps with the even distribution of sand. Brushing of bunker faces with a stiff bristle broom can also produce an interesting appearance.

Devise a maintenance plan specifically for the bunkers on your course with the aim of achieving greater levels of play and giving them the attention they need. Greenside bunkers may be raked every day along with crucial drive bunkers. Bunkers situated further out of play may get foot printed every third day.

Every golf course we work on is different.

The key to success is creating consistency throughout your site and maintaining it by minimising contamination and finding a simple solution to bunker maintenance. Good luck with your bunker endeavours this winter!