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DIARY OF A GOLF COURSE: STONEY GROUND

As the new golf course at Clandon Park takes shape and is prepared for seeding, Peter Jones takes a look, this month, at the construction techniques, materials, and preparation of the rootzone materials to ensure that the course will get off to a flying start and be economical to maintain.

Soil structure (the way particles of soil are arranged together) is just as important as soil texture (the relative amounts of different sized particles) in governing how water and air move in soils.

Both structure and texture fundamentally influence the suitability of soils for growth of grass roots, and the construction methods and choice of materials used to build a new golf course are therefore of great importance to the successful establishment of the course.

In today's financial and environmental climate, a common sense approach and an understanding of practical realities is also required to achieve the required finish.

The topsoil at Clandon Park was stripped from the greens, tees and bunker sites, and put into storage mounds in February for re-spreading at a later date.

Frequent heavy rainfall during March, April, May and early June put paid to plans of screening the topsoil for re-use around the greens and tees, and hence an opportunity for an early seeding date was lost due to weather.

Mid June saw the topsoil screening underway using a 20mm screen to remove the flints from the soil.

Pipe installation

Prior to the re-spreading, the irrigation pipes were installed and water supply connections were made to two on-site boreholes, and a mains water top-up supply. A camouflaged water tank installed, part above and part below ground level.

Drainage pipes from greens and tees were then installed, discharging into deep, vented sump holes, allowing drainage water to find its way back into the chalk.

Deep sumps were also installed into the bunkers and grass hollows and protected from silt by polypropylene membranes. Where the drainage performance of certain bunkers/hollows was



noted to be slow, a discharge pipe was installed to an additional nearby sump hole, away from the playing area.

All irrigation and drainage information was then accurately plotted onto an As-built plan as a reference aid for the greenkeepers.

Tree pits

The locations of strategic new trees were marked, and tree pits of 1m x 1m x 1m were dug out of the chalk and filled with topsoil during the respread, to save the disruption of coming back with heavy machinery during the winter months.

Topsoil Management on Fairways and Roughs

With fairways and rough areas constituting by far the biggest area of a golf course, the economic considerations for topsoil preparation can have a major financial bearing on the budget for a new project, especially where stones are a major problem.

Other new clubs around the London outskirts have tackled similar problems in various different ways. At the London Golf Club, all the topsoil was screened out of the topsoil and sand was added to bulk up the remaining soil. At The Grove, the fairways were toppedressed with over an inch of sand during the Grow-in period. Here at Clandon Park, a third method was used with environmental considerations in mind.

A tractor-mounted stone-crusher was to go up and down the fairways and roughs and physically crush the flints into smaller fragments of stone, thus retaining all the natural materials on site, and eliminating the need to import and spread expensive sand materials.

The Kirpy stone crusher required a 190HP tractor with creep gears to operate the machine efficiently, and was a slow, but worthwhile process.

Final cultivation and preparation of the seedbed was achieved by experienced and knowledgeable

operators using stone buriers, cultivators, and specialist compaction equipment. Finally the seed was sown at the recommended 25gms/m² using a drop seeder.

Tees

Preparation of the tees tops began in late June using 60% of screened topsoil and 40% of imported sand, carefully ameliorated so that the proportion (ratio) of soil was greater at the bottom of the profile, and the proportion of sand was higher near the surface of the profile - a system which works well on sports pitches. At 250mm deep, the rootzone profile can produce a sufficient hydraulic head to drain the surface well, yet have the benefit of retaining good soil strength, better water and nutrient retention, and a reduced need for irrigation and fertiliser applications during the summer when compared to a USGA rootzone. Tees were also graded with a 1% fall to aid surface run-off, and a 2m radius on each corner to create ease of maintenance with ride-on mowers.

Tees were sown with the same choice of seed as used on the fairways for ease of maintenance at a later date.

Greens

The use of a USGA rootzone was decided upon as a forgone conclusion to ensure good drainage and a resistance to compaction, albeit that the irrigation and nutrient requirements of a sand based USGA rootzone can leave a bit to be desired from time-to-time. An agronomy plan was proposed for suitable amendments to improve these characteristics prior to sowing the greens, along with the use of Mycorrhizal inoculants.

The proposed seed mixture for the greens was: 35% Chewings Fescue, 35% Slender Creeping Red Fescue, and 30% Brown top bent, by weight, with appropriate bent cultivars chosen for their colour and leaf blade characteristics to blend in with the inevitable invasion of *Poa annua* in five-10 years time.

The contours on the greens were designed and constructed to create interesting borrows and enjoyment for golfers at summer mowing heights of 4mm to 5mm by incorporating a 1% to 2% gradient through the backbone of the green, subtly rising into 4% to 6% slopes running into the surrounding mounds, with ease of maintenance being of utmost importance.

Next month's article will look at some of the Grow-In and Greenkeeping procedures.





A QUIET OPEN ... PLEASE!

Scott MacCallum travelled to Southport to meet Chris Whittle, a man preparing an Open course for the third time



If an Open Championship were measured by the drama produced on the 72nd hole, Carnoustie would be up there at the very top. Not only did last year's Open produce a stupendous finish with Pádraig Harrington and Sergio Garcia both contriving to make a pig's ear of Carnoustie's fabled 18th before the Irishman got his hands on the Claret Jug, but Jean Van de Velde has gone down in history for what happened to him back in 1999.

However, Royal Birkdale can also hold its hand up for what it produced in 1998 and, unlike Carnoustie, the memorable moments came in the shape of triumphs not disasters.

Three instances on that final afternoon stand out, all occurring before Mark O'Meara was crowned Champion. First off, O'Meara's great friend and protégé, Tiger Woods, at the time still without an Open to his name, holed a huge putt on the final green to give him a glimmer of a chance of winning the title. Then, Justin Rose, at the time a callow youth playing like a man possessed, chipped

in for a birdie from long rough well short of the green. It was his final shot as an amateur player and propelled him to a heady 4th place in the Championship. Then, under intense pressure, and with one foot in sand and the other out, overnight leader, Brian Watts, needing a par to make a play-off with O'Meara, played a bunker shot that had he gone on to win would have entered the annals of golfing history as one of the greatest bunkers shots ever played.

Great memories and it secured Royal Birkdale's place as one of the most exciting venues on the rota and one of the best courses in the country.

"I was standing by the 18th green in line with Justin Rose's chip and I remember it well as his parents were in the crowd close to me when it happened," said Course Manager, Chris Whittle, as we reminisced about that last Royal Birkdale Open.

When it comes to Opens Chris is one of the most experienced men in the business. This month's Open will be the second for which he has prepared Royal Birkdale but he was also Course Manager



at Muirfield when Nick Faldo won The Open in 1992 making him unique, among modern day greenkeepers at least, in being in charge of two different Open venues.

So does the experience gathered from twice preparing an Open venue make life easier for the third occasion?

“No, not particularly,” he laughed, after giving the question some thought.

“I suppose it must help a little bit because there is nothing unexpected. You know what’s coming and you just have to deal with it.”

With that in mind he is well placed to chart the progress experienced by the oldest championship in the world over the years.

“The whole infrastructure has become much more professional in recent years and the planning starts much earlier. For example, we started alterations aimed at The Open three and a half years ago and we have been having meetings directly related to The Open for the last 18 months,” explained Chris, as sat in his office in his maintenance facility hidden behind mounding half way down the 1st hole.

“They have already upgraded much of the permanent underground services and even at this stage they are talking about tarring the road from the 5th round to the 7th just to keep dust down for players and spectators.”

Security has increased markedly since 1998 with everyone who will be inside the ropes requiring photographic id.

In addition to his own team of 10, and the BIGGA Greenkeeping Support Team, Chris brings in another 15 volunteers to carry out preparation work.

“A lot of local greenkeepers help. Stuart Hogg, from St Annes Old Links, Peter McVicar from Hesketh and a couple of his lads; one of Craig’s Gilholm lads from Hoylake, while we also have a couple from Ipswich, where my Deputy, Paul (Laurence), used to work. My son, Jamie, who works at West Lincs, is also coming over to help. In addition I have a couple of our own artisans. I either know them or they have come recommended,” said Chris.

One thing is for sure, they will be kept busy.

“I’ll be getting them to cut greens for me but obviously cutting round bunker banks requires local knowledge for safety reasons and my team will do that,” said Chris, who will be providing some of the volunteers with hand mowers for a couple of weeks before The Open so they can familiarise themselves with them on their own courses before heading to Birkdale.

He is also installing a portacabin so that his team members can grab 40 winks when they get a chance, or sleep overnight if they’d rather be close to the job.

“It’s going in just at the back of our sheds and will just give the guys somewhere to crash when and if they feel the need,” said Chris.

Cutting is one of the issues where Chris has seen a change from his previous Opens.

“The R&A want one directional cutting of fairways and tees, with all clippings boxed off, which

immediately increases the length of time required to cut the course, In addition play now starts at 6.30am rather than 7am the last time The Open was here.”

“Instead of using two fairway mowers we’ll be using five and have them all go down one side of the fairway, come back up a spectator route and mow the other side of the fairway. It will be a little more complicated on tees as there is less room to play with.”

Greens will be mown at 3.2 mil twice in the morning and once again in the evening with tees and surrounds at 6.4 mil daily, fairways will be maintained at 10 mil with semi-rough at 30 mil.

Chris will also be making full use of the BIGGA Support team, which will be preparing bunkers as well as offering general assistance in the mornings and divoting in the evening, in addition to walking with each of the matches during play. The team is also available to assist with any other work, including squeegeeing, if the weather turns nasty.

Changes to the course see amends of varying degrees to 16 of the holes the most dramatic of which was the lengthening of the 17th with the addition of a new, tiered, green.

Other amends include 20 new bunkers being added and 14 removed, six new Championship tees, some mounding around greens and fairways extended.

“About three and a half years ago the club felt that some changes may be beneficial and asked



the R&A if they were in favour and they were keen for us to look into it. We didn't think there was anything wrong with the layout we just want to make sure that the course was up to the task of coping with modern equipment and that bunkers were in the correct place etc."

The club invited architects to submit ideas and Martin Hawtree, who has a long association with the club, was chosen.

"He submitted a presentation for the members and the R&A to vote on and this was approved unanimously without any amends or alterations to the plan," explained Chris.

Sol Golf were then appointed to undertake the work on the recommendation of Martin who said that they had been doing some great work in Ireland among other places.

"Fortunately they came in with a good quote and were available to do the work."

Work began in the winter of 2005 with the green work, which would take the longest time to settle in, being carried out first. Then it was the bunkering. At this stage the Birkdale's home team became involved in the construction.

"To give continuity on the style of the bunkers Sol Golf dug us the holes in the ground and we built and revetted them from there. We also built the new 6th and 10th tees," explained Chris.

The work was finished last winter and there has since been a considerable amount of hand watering and top dressing to ensure the new turf knitted in as well as possible.

"The members seem very happy with the changes, and are delighted to get the contractors off the course and to be playing a full course again.

"I reckon the changes will make the course one or two shots tougher for the members but during The Open the players are now so good at managing their games they can avoid hazards and the scores they shoot will be very much down to the weather and how much wind we have," said Chris.

Indeed any strengthening of the armoury need only be minimal if the scores from recent Opens are studied.

Only Carnoustie in '99 with 290 and Royal St George's in 2003 with 283 have higher winning

scores in recent times than Royal Birkdale's 280 in '98.

Looking forward to the event itself Chris has one wish, other than decent weather in the run-up.

"I want all the talk to be about the golf and the course to be well received. You want to remember the good shots that won the Championship, and that's how it should be. I'd love to be standing on the 18th green beside the new Champion feeling that we've had a quiet week with no hassle for us. I don't think it will happen though," smiled Chris - the smile of a man who has been there before.

Photographs by Alan C Birch, courtesy of Royal Birkdale Golf Club



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THE CONTRACTOR FACTOR

Appointing a contractor, particularly if it is one you haven't dealt with before, can be a stressful business. Will they deliver what they promise? Will the job be done to the standard expected? Will the costs be in line with the initial quote? GI asked three top Course Managers for their advice on the matter.



Laurence Pithie MG, Director of Maintenance for Crown Golf

Once a golf club has decided upon the project to be completed, made an estimation as to how much it will cost and be funded, the next stage in the process is to appoint a contractor who is capable of completing the work.

The use of contractors on golf courses can generally be broken down into the following categories:

- Irrigation
- Drainage
- Lakes & Ponds
- Landscaping
- Green, Tee, Bunker construction
- Arborist

Range work, including fencing as well as maintenance buildings, may also be considered but for the purposes of this exercise it is the above that are the most common.

Smaller project work is usually completed 'in-house', often with the hire of equipment being involved. This of course requires a competent user and one who has been trained in operating the said item of equipment. Tackling the larger projects involves hiring the specialist, so what are the key points that a club should consider before signing the agreement?



Trenching work on 12th underway, Merrist Wood.

Where an architect is involved, for example in the re-siting of a green, then the contractor would need to have the ability to interpret the architects drawing. A key point may then be to involve the architect in selecting a number of candidates that he or she has worked with and has performed such work to a satisfactory standard.

Where substantial irrigation work is required, such as a full installation, then it is worth appointing an irrigation consultant to design the required system and then to put out to tender the necessary documents. This ensures that each irrigation contractor is submitting a bid for the same system. The consultant also ensures that the submitted technical detail falls within the required specification. Few Course Managers would have this degree of knowledge on pumping capacity, flow rates and so on - these being essential in providing an efficient and reliable system that could cost in excess of £200,000. Contacting the irrigation supplier regarding the contractor may also be time well spent.

Procedures to follow on selecting a contractor would not only involve the cost, but also in viewing past projects that the contractor has completed. Were they completed on time? How were problems overcome? Was the equipment suitable? (e.g. tyres) Was the contractor flexible and was the work completed with minimal disruption? - These are some typical questions to raise. Looking at a method statement will prove useful in bunker

construction since there are differing views on this subject. The same would also apply for a major drainage project.

Other points to consider would be the experience of the people hired, including the site foreman who is the point of contact between the contractor and the client, Health & Safety Policy and CDM Regulations, storage of equipment and materials and the question of insurance and responsibility. The question of contingency or period of settlement should also be borne in mind, thus ensuring that no future problems exist.

It can be somewhat of a minefield but most of these aspects are ones of common sense and sound planning.

Paul Worster, Course Manager, Minchinhampton GC





Work to 5th bunker, St Mellion.

Perhaps an alternative title would be – How to get your preferred contractor to do what you want, when you want, and at the price you want. The rest is simple.

There are fairly straightforward, and rather more complex, rules of engagement, but a range of standard pre-written contracts such as Institute of Civil Engineers (ICE) 3rd Edition Minor Works are widely available online at small cost, and easily tailored to your individual requirements.

Even if you have a preferred contractor in mind – it is sensible to secure at least three estimates for the required work. There must be a clear Specification Document and Bill of Quantities to ensure that each contractor is quoting like for like - “on a level playing field” – otherwise accurate comparison suffers.

At a formal interview with each, it should be possible to get a “feel” for the successful contractor. Your mind should have been laid to rest over a wide variety of issues, and you will feel confident to award the contract. This is often called the “courtship” - the marriage (and frequently the divorce) will follow!

A contract outlines responsibilities, work to be carried out, standards required, schedule of payments, completion dates and liquidated damages (cost penalty on completion over-run), a detailed breakdown of the costs, and a contingency which is

only spent at the customers’ approval. A retention sum - (usually 2.5%) will normally be held over for a year as a guarantee against defects.

In the case of the Minchinhampton lake construction – Hawtree Ltd – the clubs retained Architects, were engaged to produce a detailed drawing showing location, elevation, volume, and specification of materials. The Specification Document and Bill of Quantities were produced, which gave a unit cost per cubic metre of spoil dug and tipped elsewhere, and an additional figure for that spoil to be landscaped and top-soiled. The contractor had responsibility for checking the architects’ calculations to ensure that the proposed figures were accurate.

A square metre cost of lining and protective layers was required, as was a finishing cost. The contract required the main contractor to source a reputable sub-contractor to carry out the very specialised waterproof lining job, and this company was to be vetted and approved by the Architect.

As in most large contracts – the main contractor is required to engage, oversee, control, and take responsibility for a number of sub-contractors, including assembling a full Health & Safety File, in order to fulfil the terms of the contract.

The architect approved each payment on a quantified basis.

As in all things – unforeseen difficulties may arise, and it can be wise not to immediately bring the full letter of the law down upon a contractor at the first signs of trouble, but to try and work together to overcome any problem. This normally leads to a far better outcome.

Lee Strutt MG, Assistant Construction Manager at the GWest project, near Gleneagles in Perthshire.



Appointing a contractor

‘Everyone views things differently’ this is one of the key considerations when appointing a contractor. You must understand that your vision and



Dealing with mobilising, storing and security of major plant equipment during long contracts.

aspirations will need to be clearly communicated to any contractor, if you want the outcome to be successful. So an important start to appointing a contract is to set out a good clear framework.

There are five main check points that I use to appoint a contractor – Research, Discuss, Appoint, Arrival on site and Completion.

Research

Before giving any consideration to hiring a contractor, you need to set out a framework of your needs and what exactly you want to be 'contracted out'. This is normally a bullet point document highlighting your needs and your overall idea of how, when, how long and what sort of standard you want achieved, are listed.

With a better breakdown of your needs you can identify what sort of skills you will need or in some cases two or three different specialist contractors to carry out the tasks. Sourcing a contractor can come from a number of different avenues – trade shows, trade magazine, the internet, personal recommendations, etc.

You will want to shortlist the contractors to three or four companies, which can supply you with the basic information for your needs. This should be previous client contract references, company setup including key staff, experience, machinery fleet (if applicable), expertise, financial standing and any others contracts that they currently working on.

Discuss

When you have decided on the three or four contractors that you wish to tender, you will need to draft a framework document into the specific needs and what you need the contractor to do. The discussions and or framework should include but not limited to:

- Headlining an overview of the task to be tackled and broken into sub groups on specific issues.

- Talk about your expectations and standard of finish that you require, do not assume any contractor will work to your standards.
- A method statement and time scale chart from the contractor on how they propose to conduct the task and what problems may arise.
- Discuss how and when progress site meetings should take place.
- A breakdown of proposed budget cost and talk about contingencies if something could go wrong.
- Discuss down time costs and what constitute standing down – i.e. weather, sickness or machine breakdowns.
- How will the contractor manage their:
 - Health and safety programme
 - Operational setup
 - Machine and material storage
 - On site office or central point contact
 - Snagging procedure
- The contractor's staff profile, education, experience and any previous recommendations from previous clients with contact details.
- Use the same set of questions for each tender so as to have a like for like comparison.
- Inform contractors of your site restrictions and rules i.e. No drink or drugs, speed restrictions on site, sensitive areas, waste disposal etc.

Appointment

Choosing the right contractor from your tender list should now be easier as you will have all the information provided through your discussions and the contractor's tender submission.

As with all tender prices, the lowest price is not always necessarily the cheapest.

You will need to assess and compare the costs put forward from each contractor; this can be partly checked using such reference books such as Spon's Landscape & External Works Price Book. This should provide a rough framework to costing for most or specific areas of a project.

Before your final selection, request to meet and speak to the proposed site contact, quite often the contract will be dealt through a sales team, company management and not necessarily the supervisor who will implement the contract. Meet them and make sure you feel they can communicate and deliver what was agreed.

On site

Once the contractor has been selected and all contracts agreed, there will be the onsite formalities to be outlined to all contractor personnel. Details covered –

- Site inductions - making sure all contract personnel understand your existing onsite regulations i.e. speed restrictions, codes of conduct, Health & Safety, etc
- Contact details - covering emergency contact numbers for both yourself and the contractor.
- All contractor employees present all their necessary certified documents for referencing. i.e. certificate of competence for all relevant areas of the project (these should be photocopied for reference).
- Site office or central point of contact are clearly marked so all deliveries or contacts are directed to the right location.
- Request all delivery documentations to be submitted and copied. These will help prevent being billed for materials not delivered or double billed.

Completion

Hopefully the contract has gone to plan and if not, it should have been documented and discussed by both sides on the outstanding issues and a resolution plan agreed. Good regular snagging lists are always good tools to monitor costs, progress and quality standards.

Good clear communication and professionalism will always help make any contract a success.