If you are altering a green next Autumn it is not too early to start planning for it now.

CONSTRUCTING A NEW GOLF GREEN ON AN EXISTING COURSE

by

D F BOOCOCK

BEFORE going to the considerable trouble and expense of constructing a new golf green, committee members should examine the pros and cons very carefully, preferably in consultation with a golf architect, and be absolutely sure that any change in a particular hole will bring lasting benefits over the years. Quite often one sees abandoned green sites on a course — members having realised after a year or two's trial that the old way was better after all!

Once the project has been agreed, the operation should be carefully planned, particularly if the course staff are going to undertake it as an extra to routine maintenance. Constructional work, especially involving major grading to form satisfactory levels, is best completed during the drier months of the year. The aim should be to have the green site prepared up to the final cultivation stage by mid-August despite the considerable demands on labour for regular grass cutting on the rest of the course.

In order to gain time, turfing the new green is generally preferred to sowing and turf may be taken from the green which is being replaced. On the other hand, this procedure involves a time lag when neither old nor new green is available for use. The difficulty can be surmounted by preparing over a period beforehand (scarifying, feeding, mowing) a suitable area of turf elsewhere on the course. If sufficient turf is not available for the whole site then banks and parts of surrounds could be sown (together with any areas damaged by the passage of heavy equipment) and turf used only for the immediate approach and the green itself. The turfing should be completed during the period October/December.

Having chosen the site, consideration must be given as to how best to form the green. If the ground slopes up towards the green or if there is a cross fall the cut and fill method is usually adopted. If the ground slopes down to the site then filling material will have to be imported (or excavated elsewhere on site) to raise levels at the back of the green, setting it up to catch the ball. On fairly level ground it may be possible to just bring in sufficient top soil to form banks and allow these to be merged in naturally with surrounding levels. In all cases acute slopes and angles should be avoided; contours must be as gentle and natural as possible both for aesthetic and maintenance reasons.

Where considerable grading is necessary the first step is to strip the turf and top soil from the area of the green and its surroundings. Grading is then carried out in the sub-soil, the filling being deposited in uniform layers about 6 in thick and made firm to minimise settlement, but not so compact that drainage suffers. If the greenkeeping staff are tackling the job it will probably be necessary to hire suitable equipment together with operator. The surface of the foundation level should be moulded exactly to the contours required on the finished green, ensuring that there will be plenty of flat places for the pin, and that the final surface will naturally shed rainwater. This last point is particularly important where greens are sited on the foot of a sloping fairway — there will be considerable surface water runoff from surrounding higher ground and too often the green acts as a natural

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collecting point for such water. During the grading work bunkers should be formed and drained as required.

On heavy or wet land tile drainage will be required for the green and on very poor sites a hard core drainage layer with suitably spaced drains tapping this may be advisable. With a sandy, free-draining site it will be reasonable to omit drains in the first place and only introduce them later if proved necessary.

Where a drainage layer is needed, the tapping drains would be introduced into the sub-formation surface and backfilled with porous aggregate of 3 in-$\frac{3}{4}$ in gauge, eg graded clinker, gravel rejects etc. The drainage layer is then laid, using small mechanical dumpers and taking appropriate precautions to avoid damage to drains. After a blinding layer of fine hard ash, preserved top soil is then spread over the area to form a uniform surface layer of not less than 9 in firmed depth on the green itself. On banks and surrounds less soil is necessary, say 3-4 in.

On sites where an ordinary tile drainage system is needed, or where drains can be omitted, the top soil spreading is completed and followed by sub-soil cultivation to relieve all compaction. The latter is done by means of a sub-soil cultivator or a mole plough fitted with a sub-soil shoe. The operation should be carried out with the maximum fall on the green at 2 ft centres and at a minimum depth of 18 in and repeated at an angle where appropriate. Land drainage follows sub-soiling and care must be taken to remove sub-soil spoil without contaminating the top soil.

On completing the above work, ploughing is usually needed and care should be taken not to turn up sub-soil. Cultivations follow to produce a reasonably fine tilth and to relieve all compaction through the full top-soil depth. Ordinary agricultural implements are best for this work, eg disc or tined harrows; the use of rotary cultivators (particularly those operating at high speed and pulverising the soil) should be avoided. Running the discs etc up and over the banks surrounding the green is often a useful way of blending the banks in to give a natural appearance.

During cultivations the opportunity can be taken to ameliorate the top soil using materials such as gritty lime-free sand, peat and dried sewage. It should be borne in mind that once the turf is laid very little can be done from the surface to alter the character of the underlying soil. Skimping at this stage can mean the difference between an excellent green and just a mediocre one. The quantities of the various ameliorants needed are dependent on the soil type. With a heavy clay top soil up to $7\frac{1}{2}$ tons gritty lime-free sand and 5-10 cwt granulated peat per 100 sq yd might be needed. Poor sandy soils lacking organic matter may need peat and/or dried sewage. The soil ameliorants should be applied evenly and then thoroughly cultivated into the top soil.

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Soil tests should also be completed to determine any lime requirement or major nutrient deficiency and appropriate corrective action taken. Any lime necessary is applied at some convenient time during the cultivations but the fertiliser is withheld until just before turfing.

Having completed the bulk of the work by, say, August the site can now be cultivated at intervals to clear it of weeds until October. Of course, if adequate watering facilities are available it is possible to carry straight on and turf the green. However, turfing usually commences when weather and ground conditions are favourable from the first week in October. A fine, smooth and evenly firmed turf bed should be prepared to the levels and contours desired by alternate hand raking and heeling. During this work any surface stones or other rubbish would be removed. The final operation is to spread and rake in the fertiliser.

Turf lifting these days is best done mechanically and many contractors have a suitable machine available for hire. The work is done quickly with the minimum of damage and a uniform end product is assured; this eases laying considerably. The turf should be laid with broken joints, each turf being closely butted to the adjoining turves. It is best to work from boards placed on turf already laid so that the prepared soil surface is not disturbed. The necessary materials should be transported over boards so that newly laid turf is not subject to direct traffic.

On completion the green should be given a light rolling using a 5 cwt hand roller. A sandy compost is then applied at the rate of about 4-5 lb per sq yd, and thoroughly worked into the surface.

The major work is now over but the green is by no means in a playable condition. Self congratulation should be reserved until an acceptable putting surface has been created.

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