

Renovation vs. Rebuilding Greens

by HOLMAN M. GRIFFIN, Agronomist, USGA Green Section

Most golf courses are in a constant state of change as club officials try to keep pace with changing conditions. Some of the main reasons for change are:

1. To improve turfgrass and playing conditions.
2. To reduce maintenance costs.
3. To overcome wear caused by increased play.
4. Fundamental weaknesses in construction.
5. Pride in membership, which generates the desire to have the best possible golf course.

With so many reasons to change a golf course the problem becomes one of how best to accomplish the revision. Since golf greens are the most complicated and expensive part of the course, the most difficult problems usually revolve around them. Probably the question most often encountered is whether to rebuild or to renovate.

For clarification, the terms "rebuilding" and "renovation" should be defined. Rebuilding means to start from the beginning and build as if no green had existed there before. Renovation means to restore, to renew, to make over or repair. When applied to a golf green, it is sometimes rather difficult to draw a line between the two, but for our purposes we will use rebuilding to denote complete change and renovation to mean repair.

The question of whether to rebuild or renovate can best be answered by stating an analogy between maintaining an automobile and maintaining a golf green.

If you wreck your car, have an old model lacking modern features, or if your car is in poor repair, you decide whether it is best to repair the old one or to buy a new model. Your decision is based primarily on economic considerations and personal preference. The same kind of decision has to be made on a golf green when it becomes undesirable for play.

A bent fender or a lack of air conditioning, for instance, does not necessarily call for buying a new car because these items can be repaired or added. However, if you have a sports car and

you need a station wagon, you change cars.

When we speak of golf greens, design errors or obsolescence can usually be remedied only by rebuilding; agronomic faults leave us with the choice of whether to rebuild or to renovate.

The decision to rebuild or renovate ultimately should be based on the nature of the problem. You must weigh carefully the chances of satisfactorily resolving the problem by modification against the merits of total renewal. Determine how serious is the problem, which method of correction is least expensive, and which method gives the best chance for lasting improvement. The opinion and advice of someone well versed in agronomic principles will best answer these questions. If design is at fault, a competent architect could help correct it. A good golf green comes from blending sound agronomic features with good architecture.

Because of the variety of circumstances under which the decision to rebuild or renovate may be faced, it is very unlikely that any unyielding rules will apply in all cases. Probably the only factors with any real bearing on the final decision are an accurate cost estimate and a determination of which method will cause the least inconvenience to golfers.

Modification is usually easier and less expensive, but it entails a lot of guesswork and has definite limitations. When the putting surface has to be removed to modify the soil underneath, this is sufficient reason seriously to consider rebuilding.

However, rebuilding does not of itself assure success; it has to be done properly. Several clubs rebuilt greens only to find that the new greens were worse than the old.

To be certain of sound construction, at least from an agronomic standpoint, follow the method advocated by the Green Section since 1960. This method virtually eliminates the chance of agronomic faults if it is properly employed.

Some club officials spend extra money each year trying to renovate a problem green. Then after suffering for several years, they decide the green has to be rebuilt. Not all clubs or greens fall into this class, but there are a lot more than there should be.

This doesn't mean that renovation attempts are never justified, because that depends entirely on the particular problem that must be solved.

Another reason that rebuilding could be better and more economical in the long run is that it is impossible to obtain as good a soil mix by blending on the site with a tiller or disc as it is by mixing the components away from the site and placing them on the green.

Maybe some day someone will devise a fool-

proof method of renovation, but until then the process will be strictly guesswork and should be considered in its proper place as second best to a good rebuilding job when significant problems are involved.

Any of our present methods of renovation which attempt to modify a green below depths of one inch should be taken under advisement. Be sure that members will get the most for their money and that any changes fit into the long range plan of improvements.

Putting Green Construction

by JAMES L. HOLMES, Agronomist, USGA Green Section

In 1960 the USGA Green Section published the article: "Specifications for a Method of Putting Green Construction." This is a laboratory-proven method of construction that is known to have the following characteristics even after soil compaction:

1. A known and relatively constant water infiltration rate.
2. A known and relatively constant water permeability rate.
3. A predetermined amount of air or void in the soil mix.
4. That amount of void which will contain air balanced against that amount of void which will contain water when the soil mix is at field capacity.

A perched water table phenomenon described in the specifications becomes of paramount importance when greens are built in this manner. Thus, if attempts are made to build greens following this method, instructions must be followed **exactly**. In order to keep infiltration and percolation rates within prescribed limits and to arrive at a suitable air-water relationship at field capacity, it has been proven necessary to use a relatively large percentage of coarse material such as sand in preparing the putting green soil mix. This is especially true in dealing with soil high in content of silt, clay, or organic matter.

One or more greens built according to Green Section specifications have been installed at many golf courses. Usually when a club decides to build one green according to these

specifications, it is built in the poorest possible location and where a history of failures exists. Invariably this new green holds up better and then clubs frequently rebuild all their greens to these specifications.

Of foremost consideration is the fact that greens built by this method can be played immediately after a heavy rain or even after a green has been mistakenly watered to excess. With increasing traffic on putting greens, this characteristic becomes ever more important. Greens which do not contain adequate internal drainage are seriously damaged if play is allowed when soil is saturated. If for nothing else, a method of putting green construction which allows play immediately after saturation is of considerable help.

Previous Methods

The traditional method of building greens was to form general contours with existing soil, then spread sufficient sand and organic matter (humus or peat moss) so that a mixture of approximately $\frac{1}{3}$ native soil— $\frac{1}{3}$ sand— $\frac{1}{3}$ organic matter (or 1-1-1 ratio) is present to a depth of eight to 10 inches after mixing. Numerous mixing procedures are followed, such as plowing, discing, rototilling and shoveling. Such greens have presented suitable putting surfaces for 60 years or more, especially where surface drainage has been adequate.

No doubt a majority of greens in the United States were constructed in this manner. However, the demand on greens is increasing steadily. Golfers insist on playing at any and