COMPLETE RECONSTRUCTION OR PARTIAL RENOVATION

How should you invest your money?

BY PAUL VERMEULEN AND CHARLES "BUD" WHITE

Once hidden in the shadowy recesses of densely planted trees, dozens of classic golf courses built during the early 1900s have undergone extensive restoration to regain their prominence with the American golfer. Notably, the North Course at Olympia Fields Country Club underwent a complete facelift and thus was able to successfully challenge the greatest players in the world during the 2003 United States Open.

In many cases, the restoration of an architectural masterpiece designed by the likes of Willie Park, Jr., requires rebuilding one or more of the greens, or, at a minimum, updating the putting surfaces with a new turf variety. This work acknowledges the fact that maintaining fast, firm putting surfaces expected by today's golfers requires large, well-drained greens established with turf capable of being continually mowed at an eighth of an inch.

To determine if the scope of a restoration project should include the complete reconstruction of all 18 greens or simply some sort of partial renovation requires in-depth design, rootzone, and site analyses. Without giving equal consideration to all three, it would be impossible for the ownership of an older course to make a sound investment in their future.

DESIGN ANALYSIS

As a starting point, the fundamental design of each individual green must be examined with a critical eye. And, as judging putting green design so often includes an overall evaluation of artistic merit, it is always best to solicit the assistance of a knowledgeable golf course architect.

Key elements of design that should be taken into account in the analysis of putting greens are traffic distribution, playability, and surface drainage. Combined, these elements can have a profound effect on both the enjoyment of a round of golf and a superintendent's ability to maintain high-quality turf conditions throughout an entire growing season.

To help determine the cause of a problem green, the rootzone and drainage should be thoroughly examined. Digging one or more inspection holes or removing deep soil cores with a soil probe allows you to look for signs of trouble in the soil profile.

To gain an appreciation for traffic distribution, or, more accurately, how well the wear and tear of normal golfing activities can be dispersed across the surface of a green, it is necessary to count the number of hole locations. Generally speaking, a hole location is a circular area of approximately 250 to 300 square feet with a slope of less than 3%. Courses with a high volume of play should have eight to ten hole locations per green, whereas those with a low volume of play need only six to eight. It is time to start thinking about complete reconstruction when the number of hole locations drops below five.

Judging a green's playability can be very complicated because it requires an interpretation of what is fair or equitable. Nonetheless, as anyone who plays golf knows, when a well-struck putt will not come to rest within a few feet of the hole because of severe contours in the putting surface, the game becomes a great source of frustration rather than fun. This point was certainly well illustrated during the 1998 United States Open at The Olympic Club when Payne Stewart's putt barely missed the hole on the 18th

Water standing in a hole for several hours after a heavy rainfall is a clear indication that a green is an excellent candidate for reconstruction or, at a minimum, new drainpipe installation. In this particular case, it also is noteworthy that the voids created by deep-tine aeration with large solid tines failed to improve subsurface drainage.

green and then rolled back in his direction an additional 20 feet. The fact that many older greens need to be redesigned with less severe contouring can be traced back to several technological advancements that have increased the average Stimpmeter reading during the last 25 years.

Surface drainage, it is said, can never be good enough. In an ideal sense, every green on the course should be designed to shed surface water in at least three directions during heavy rainfall. Due to the overall lay of the land at most sites, however, designing a course to meet this lofty goal is often impossible. The point at which surface drainage typically becomes a serious issue is when 1) the entire putting surface drains toward the front, 2) the putting surface has water-holding hollows, or 3) a large watershed in an adjacent rough area drains directly onto the putting surface.

ROOTZONE ANALYSIS

Analyzing the rootzone for problems should include testing the physical characteristics of the soil and reviewing exactly how a green was built. Testing the physical characteristics of the soil essentially requires submitting an intact core sample for laboratory analysis. Obtaining an intact core sample from a green is as easy as driving a short section of 2" plastic pipe all the way into the surface and then carefully removing it in a manner that prevents soil from falling out the open end. After the sample has been taken, it can be sent to one of several accredited physical soil testing laboratories located throughout the country.

Laboratory testing will determine a number of physical parameters, such as soil type, sand particle size distribution, organic matter content, and porosity. Caution should be exercised, however, when interpreting the test results from soil-based greens. Case in point, if the results from a soil-based green are judged using the specifications for a modern, sand-based green, one can falsely conclude that complete reconstruction is an absolute necessity due to low infiltration and porosity measurements. At most, test results should be used to support other evidence of a green's candidacy for complete reconstruction and not serve as the sole indicator of severe problems.

A visual examination of the rootzone should be performed by digging one or more inspection holes in the surface of a green or by removing several deep soil cores with a standard probe. Common signs of trouble would include such items as layering in the soil profile, inconsistent blending of soil amendments, uneven soil depth, black layer development, compaction, and poor root development.

A thorough visual examination should also include an inspection of the drainage system underneath the rootzone. For greens that were built with a gravel layer, the drainage system can be checked by running water through a ¾" hose into an inspection hole on the high side of a green. If water starts flowing out of the outlet pipe at the low side of the green after 20 to 30 minutes, it suggests that the drainage system is working properly. To be absolutely certain that all of the pipe underneath a green is still functioning, a fiber optic video camera can be used to check the drainage system.

SITE ANALYSIS

In the real estate business, the fundamental law of property value is location, location, location. In the golf course business, location is of equal importance to the laws of successful putting green management. In short, premium sites for putting green management all have two things in common — excellent sunlight exposure and unobstructed air circulation.

Sunlight exposure is pivotal to the management of low-cut turf because it is literally the driving force of photosynthesis. This biological process is responsible for converting carbon dioxide and water into life-sustaining complex carbohydrates. The take-home message regarding sunlight exposure is simply that, if an older green has sparse turf

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cover because it is in a shady location, there is no reason to consider either complete reconstruction or partial renovation because the result will simply be a disappointing reflection of the green's current condition.

The best approach for making an accurate evaluation of sunlight exposure on a problem green is to have the surrounding trees or other obstacles measured by a landscape surveyor. This information can then be entered into computer software and used to project the total hours of full sunlight exposure on any given day of the year.

The role of air circulation in turf management is admittedly more important in warmer regions of the country. This is because a current of air flowing across the surface of a green has a cooling effect. In warmer regions, this cooling effect can reduce the turf's canopy temperature on hot afternoons by as much as 15°F. If a problem green is situated in a stagnant location, restoring it without improving air circulation should not be attempted.

Based on the findings of design, rootzone, and site analyses, making the right financial decision regarding whether to completely reconstruct all 18 greens or opt for some degree of partial renovation should be much more straightforward. While some critics of classical golf course restoration might disagree, updating older greens with modern restoration techniques is a great way to invest in the future of the game.

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If the root cause of poor subsurface drainage in older greens is the malfunction or complete absence of drain tile, then the installation of new drainpipe by an experienced contractor can set the stage for making future improvements.