

## PUTTING GREEN DESIGN

CHARLES N. ECKSTEIN, USGA Green Section Committee

Fifty-four strokes of every round of par golf are theoretically played to or on putting greens — one shot to the green and two putts. No wonder good design of greens encompasses golfing values, that it encompasses maintenance considerations, and that there must be compromise between these factors.

What are golfing values? A shot to a green which must carry a sand trap and have enough backspin to hold on a downhill slope away from the line of play? A long putt downhill, curling over a slight mound, with a chance to take two more putts or a chance for a short one-footer? A course that you have to think your way around, weigh birdies or pars against double bogies, triple bogies, and worse? A course you never get tired of playing because wind, pin placements, and trap carries cause it to play differently every time?

All these conditions determine golfing values. We are concerned here with those 54 shots, the golfing values of the putting green.

Allow me to present my thoughts about golf values. I classify holes in terms of one-shot, two-shot or three-shot holes. The average player plays to a handicap of about 18. The greatest obstacle to improvement in most cases is lack of ability to attain distance.

Because distance to the green should be related to the size of the target, I consider size the No. 1 characteristic in evaluating a green. I believe that a one-shot hole 250 yards long should have the largest target (green), and that a short one-shot hole should have a proportionately smaller green. On longer holes, size of the target should vary proportionately with the length of the approach. As a result of this viewpoint I have called the first characteristic of any green its *size*.

The second characteristic is *shape*.

It may be described as (a) depth from front to back, (b) width from side to side, (c) outline of perimeter resulting from mowing or trapping.

The No. 3 characteristic is *location* or *orientation*. This refers to (a) elevation relative to fairway, (b) position relative to lines of flight, (c) location with reference to natural objects such as trees, water, boundaries, etc., (d) location with reference to other trouble, unplayable lies, etc.

*Contour* is the fourth consideration. A green may be (a) tilted, sloped or pitched in any direction, or combination of directions, (b) terraced, (c) undulating, (d) guarded by adjacent mounds not part of the green that require carries, (e) any combination of these.

The fifth characteristic is *trapping*. This device is used for (a) setting up the target, (b) creating mental hazards as to position, distance and carry, and (c) to provide penalties for poor shots.

### Golfing Values

I firmly believe that these characteristics of a putting green determine golfing values. Hopefully, the designer will modify these characteristics to the extent dictated by maintenance requirements and playing problems.

With reference to our first characteristic, *Size*, we must abide by the following maintenance considerations: (a) Variable cup placement adds interest, spreads traffic, prevents soil compaction and actual wearing out of the grass, (b) Consideration must be given to the efficient use of fertilizer, labor in mowing, spraying, aerifying, spiking, etc., (c) Cost of original construction is a factor, (d) At least a 10-foot to 12-foot apron should be provided so that mowers can turn off the green, (e) Size of green must be in harmony with other factors or char-

acteristics such as shape, elevation, location, contour, and trapping.

*Shapes* of greens probably are less affected by maintenance problems than is any other factor. Even so, there should be consideration of the cost of watering, mowing from every direction, and traffic patterns to and from the green. How shape affects trapping or vice versa is an important factor in construction costs and costs of maintenance of traps thereafter. The approach areas must be considered in determining the shapes of greens.

*Location* of greens depends on (a) air circulation, (b) effect of tree roots and shade, (c) traffic patterns with reference to next tee, (d) maintenance of approaches to greens, (e) cost of varying elevations and how this in turn affects placing of traps.

### Contour and Maintenance

The green characteristic that I call *Contour* affects maintenance so much that it undoubtedly is the basis of the entire subject. Let us consider that a good green must be constructed with (a) surface drainage for run-off, (b) gentle grades for maximum cupping area, (c) grades that will permit mowing in any direction to prevent scalping and undue wear, (d) consideration for collars and adjacent slopes, (e) provision for avoiding erosion of adjacent traps.

Contour definitely affects the size or area of a green. The amount of actual surface used for slopes and irregularities cuts down the available cupping area. As an example, a putting green may contain 5,000 square feet. But because of an irregular shape and the fact that there are surface irregularities occupying 30% of the area, the effective size is much reduced. Fair pin placement will dictate that it be no closer than 10 feet to the edge. (Note—USGA recommends 15-foot minimum). Thus, 2,600 square feet around the perimeter plus the 1,500 square feet occupied by slopes and irregularities

account for 4,100 square feet. This leaves only 900 square feet (an area 20' x 45') for effective cup placement. The use of gentle slopes will permit much more effective use of any given size of putting green.

The last characteristic of greens I call *Trapping*. This characteristic certainly is compromised by (a) cost of construction, (b) cost of maintenance, (c) drainage, (d) traffic, (e) mowing, (f) erosion.

I have played many courses in the Middle West, mostly around Chicago, and I have seen 18 greens all pitched from back to front with from 2% to 3% grades—drainage was the major consideration; 18 greens all elevated and pitched so as to be targets requiring no skill; 18 greens which all remind one of plates upside down; 18 greens all flat.

It is my impression that these are the things that make golf courses dull, and these are the courses you don't want to play. I am sure the reason that lengthening courses has been so much publicized is because the shots to the greens of most courses are too easy and uninteresting.

I spoke to many golf course superintendents in our area and they concluded that a small green today should be about 4,000 square feet and under no circumstances should a green be over 8,000 square feet in area. A green of this size will provide sufficient area for changing cups, maintaining traffic distribution, and caring for all maintenance problems. This size green also can create sufficient interest, require good shots, and require long and short putts. Golfers of all abilities can be kept happy and interested in that hole or that course.

---

*The photographs of the USGA Green Section Educational Program on pages 2, 3 and 7 are courtesy of Joseph Gambatese.*