

How Wide Should a Green Be? This Diagram Tells You

By JACK FULTON, Jr.

HOW WIDE should a green be? Can it be determined mathematically? Few followers of the game of golf have ever given this a thought, yet it is obvious that a green 100 ft. across is too wide for a hole measuring 140 yds. from tee to cup, and a green 30 ft. across is too narrow. The *ideal* width, wide enough to be fair and narrow enough to require accuracy, lies somewhere between. Can this be determined in advance of construction to guide the architect?

Bill Langford, of the firm of Langford and Moreau, golf course architects, has been studying and experimenting with green widths for a long time and has recently worked the final kinks out of a graph which he says will give you the right answer in a jiffy. The graph is reproduced with this article.

Hole length is shown horizontally in yards, each vertical line from the left margin representing 10 yds., with a heavier line for each 100 yds. Green width is charted vertically, 10 feet to a line.

Reading Graph Is Simple.

To determine how wide a green should be for a hole of known length—say 430 yds.—follow along the base of the chart to the 430 yd. line and count how many feet it is up that line to the point where the diagonal line crosses it—in this case 85 feet, the proper width for a 430-yd. hole green. That's all there is to reading the graph.

In determining the contour of the zig-zag line which runs through the chart,

Langford called into service some rather advanced mathematical practices. Comments on his general method will aid in understanding why the diagram is so laid out.

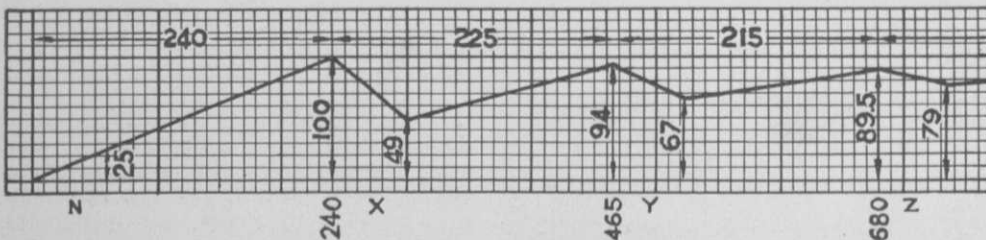
In the beginning, certain basic assumptions were established. First of all, he believes 240 yds. is a fair *average* of a first class golfer's drive when he hits it, and that a hundred foot green is wide enough to receive shots of that length.

With this start Bill charts green width for one shot holes. Since obviously the width of a green should depend directly on the length of the shot played to it the graph starts at 0 and runs to 100 feet at 240 yds.

How Two-Shot Holes Were Charted.

The probability of a player getting home in one stroke on holes over the 240-yd. mark grows less as the distance increases until that length hole is reached which is just beyond the longest tee-shot. Said another way, this length is the shortest which a first class golfer will certainly need two shots to reach. He fixes this distance at 300 yds., allowing 60 yds. for extra long tee-shots.

Since the golfer will almost always need two shots to reach a green within this 60-yd. zone (between 240 yds. and 300 yds.) it would be absurd to keep the green 100 yds. wide for the easy pitch shot which will generally be left. The green must be narrower. Just how much narrower Bill has determined by mathematical progressions.



Use this diagram, as explained above, to determine proper green width. For readers mathematically inclined, the tables on the next page will tell how graph was developed

While 240 yds. is a fair average for a well-hit tee-shot, it is too long for a well-hit brassie shot, because the club's face is laid farther back and also because varying lies and stances are met. For an infinite number of brassie shots—played under varying conditions of lie and stance—a fair average is 210 yards, Langford estimates. This is 35 yds. under the well-hit drive average.

But it would not be correct to figure on the entire 35 yd. allowance on a two-shot hole. Not only is there a good possibility that the golfer will exceed 240 yds. off the tee, but there is a chance that the lie and stance for the brassie shot will be good. So a proportionate part of the allowance is given on two-shot holes, more on three-shot holes and the entire allowance on holes requiring four or more full shots from tee to green.

The total allowance progresses in regular stages—15 yds. on two-shot holes, 25 yds. on three-shot holes, 30 yds. on four-shot and longer holes. Thus the extreme length of a two-shot hole, according to Langford, should be 240 yds. plus 225 yds., or 465 yds.; of three-shot holes, 240 plus 225 plus 215, or 680 yds.; of four-shot holes, 240 plus 225 plus 215 plus 210, or 890 yds.

The graph shows the width greens for one-shot, two-shot, three-shot holes, etc., progressively. In each case it rises to show wider greens as the length of the shot to them increases, falling again in the intermediate zone between each definite class of hole as the probability of their being reached by a long shot decreases.

Must Allow for Rugged Terrain.

The graph is designed for level terrain and average ground speed but it can be used for rolling or hilly land by computing the actual playing length of the hole and using the proper width green for that length of hole. For example, an up-slope at the point where balls are liable to land will increase the playing length of a hole. Similarly a down-slope will tend to decrease the playing length.

Langford feels that the present day arbitrary limits for par are incorrect, and that par-figures should be as follows:

- Par 3 hole..... 240 yds.
- Par 4 hole..... 465 yds.
- Par 5 hole..... 680 yds.

The par-3 distance is not greatly at variance with present standards, but the par-4 and par-5 distances exceed the U. S. G. A. recommendations by 20 and 80 yds., respectively, enough boost to make a lot of

Shot Length	Progressions	
	Maximum	Minimum
240	100.0	25
-15	-6.0	-24
225	94.0	49
-10	-4.5	-18
215	89.5	67
-5	-3.0	-12
210	86.5	79
-0	-1.5	-6
210	85.0	85
	-0.0	-0
	85.0	85

Par Change	Shots					
	1st	2nd	3rd	4th	5th	Average
240	240					240 yds
465	240, 225					232½ yds
680	240, 225, 215					226½ yds
890	240, 225, 215, 210					222½ yds
1100	240, 225, 215, 210, 210					220 yds

$$\frac{x}{240} = \frac{y}{225} = \frac{z}{215} = \frac{w}{210}$$

N = x = 60

present day easy par-5's—those lying between 446 yds. and 465—mighty tough par-4's.

Readers interested in the mathematics behind the graph may obtain full details by writing W. B. Langford at 2405 Grace St., Chicago.

Argentine Golf Interest Brings New Magazine

AS THE FIRST golf player magazine to be published in Latin America, *El Golfer Argentino* recently made its appearance. It had an initial circulation of 8,000. Single copies sold for \$1. Thirty advertisements appeared in the first number.

The magazine is published by Editorial Atlantida, Buenos Aires.

MUNICIPAL welfare department of Dayton, Ohio, is constructing a golf course in the Miami View district to be devoted to the exclusive use of colored citizens. Laborers, from the unemployed workers of the city, are paid in grocery orders.