



The Teeing Ground

No. 2 Hole at Merion Golf Club, Ardmore, Pa. A beautiful tee that is large enough for constant tee marker changes adding to the enjoyment of this golf hole.

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Years ago the quality of a golf course was determined by how well the greens played. Today a course with just good greens hardly receives honorable mention. Golfers now look for excellent turf from tee to green. New machinery, high quality chemicals, high maintenance budgets and trained, knowledgeable superintendents have made quality turf throughout the course a reality. More leisure time, Arnold Palmer, Jack Nicklaus and television have brought the golfers and would-be golfers out in droves.

In 1969 the National Golf Foundation estimated there were 200 million rounds of golf played in the United States. In 1973 they estimated the number of rounds played to be 240 million. That is a lot of golf. The NGF places the annual average at 22,000 rounds per 18-hole facility in the United States. Increasing play is good for business for golf clubs and golf equipment manufacturers, but it causes problems for the course superintendent. Increased play means more cart and foot traffic. Although foot traffic and compaction have been a problem since "day one," they are still among the major problems we face today. Golfers wear foot paths between bunkers; wear the turf around benches and ball washers to bare ground; compact and wear putting surfaces; and

as each year ends, greens become more difficult to manage.

Invariably, we think of traffic damage on greens when we think of traffic problems. Actually our attention should be on the tees. The tee is the one area that receives the most concentrated traffic on the golf course. The tee is a relatively small area that must withstand the punishment every golfer deals out. Tees are subjected to the most violent strokes in the golf game; the "tee shot." The golfers wiggle and shift their feet to get a "firm" stance and then swing with all their might trying to hit the ball out of sight.

The superintendent thinks of the tee as an area that is slightly raised, square to rectangular in shape where tee markers are placed. This area must be big enough to allow the location of tee markers to be changed frequently to prevent excessive wear of the turf in any one location. The Rules of Golf define the teeing ground as a rectangular area two club lengths in depth, the front and sides of which are defined by the outside limits of two markers. Now let's do a little math. The Rules say the limits of the tee are defined by the outside limits of two markers. Let's say these markers are 18 feet apart. Of this 18 feet only 13 are actually used for teeing. Since most golfers will not tee the



Flowers can be used to make tees attractive as well as to control traffic.

ball any closer than one foot to the marker because of the distraction or fear of hitting the marker, two feet are lost. Another three feet are lost because of the stance. So, multiplying 13 feet (18 minus 5) times 3 (the width of the stance), we get 39 square feet used for teeing ground. Now, on this particular day we have a tournament with 100 players, all playing the same course and using the same markers. Each player is wearing spikes and each shoe has 12 spikes. We said the tee was 18 feet wide; the golfers have to walk on the tee, tee the ball, hit the ball, and walk off the tee—we won't make them pick up their tees today—so very conservatively, each man takes nine steps on the tee, seven of them within the 39 square feet we spoke of earlier. So 100 (the number of golfers) times 7 (the number of steps) times 12 (the number of spikes per step) equals 8,400 spike marks in this 39 square feet which is equivalent to 216 spike marks per square foot!

Physical Requirements

Most people concerned with golf course maintenance will agree that the numbers mentioned above are conservative. Most golf courses

expect more foot traffic damage on their tees. There are several ways the problem of foot traffic wear on the tees can be reduced and held to a minimum.

One way is to insure the tee has enough *usable* teeing surface so that the tee markers can be rotated on a regular basis. We often ask ourselves how much area is enough? An excellent rule of thumb for tee size is to have a minimum of 100 square feet of *usable* teeing area for every 1,000 rounds of golf played on your course per year on par-4 and par-5 holes, and a minimum of 200 square feet per 1,000 rounds per year on par-3 holes. The first and tenth tees where a lot of standing and practice swings take place, should be treated as par-3 holes. Going on this basis, from the figures the NGF came up with this year for the average 18-hole facility, par-4 and par-5 holes should have a minimum of 2,200 square feet of *usable* teeing area and par-3's, No. 1 and No. 10 should have 4,400 square feet of *usable* teeing surface. We also must take into consideration, when tees are being built or rebuilt, the potential play five to 10 years from now. It's almost certain the number of golfers will not decrease and construction costs in all probab-

ity will not decrease. Therefore build the tees for the future, not the present. If you don't, the tee you build today will, in all likelihood, soon be outdated.

Another requirement of a tee is the location. The tee should conform to the topography of the area surrounding it. Not just the immediate area but 20-30 yards around the tee. This will enable you to control traffic flow around the tee as well as on and off the tee. Many tees that are now badly worn can be improved by not changing the tee itself but the surrounding area. Traffic control around the first and tenth tee is especially important. Many ideas can be very artistically developed for traffic patterns with the use of paved paths, curbs, split-rail fences, low-growing hedges, flower arrangements, well thought-out placement of ball washers, trash containers, score card boxes and water fountains.

Manicuring or general house-cleaning around tees can influence traffic patterns. If a tee is well kept, the golfers will be more likely to stay on paths and around areas where trash can be deposited. Higher heights of cut on the edge of tees can make golfers observe paths more readily because the areas where they should go are better defined.

Before locating a tee, look at it from the golfer's standpoint. Is the tee located in a way that the golfer does not have a blind shot? Is the tee aimed towards the center of the fairway, or does it point directly at a water hazard or an out-of-bounds area? Does the golfer have a good tee shot to the fairway from

any point on the tee? If you can answer yes to these questions, then you are well on the way to a good tee from a golfer's standpoint as well as your own. A tee of this caliber will enable you to use the entire teeing surface for marker placement. Now all you have to do is give the tee a shape that will enable you to control the traffic around it and will meet the golfers' needs for location.

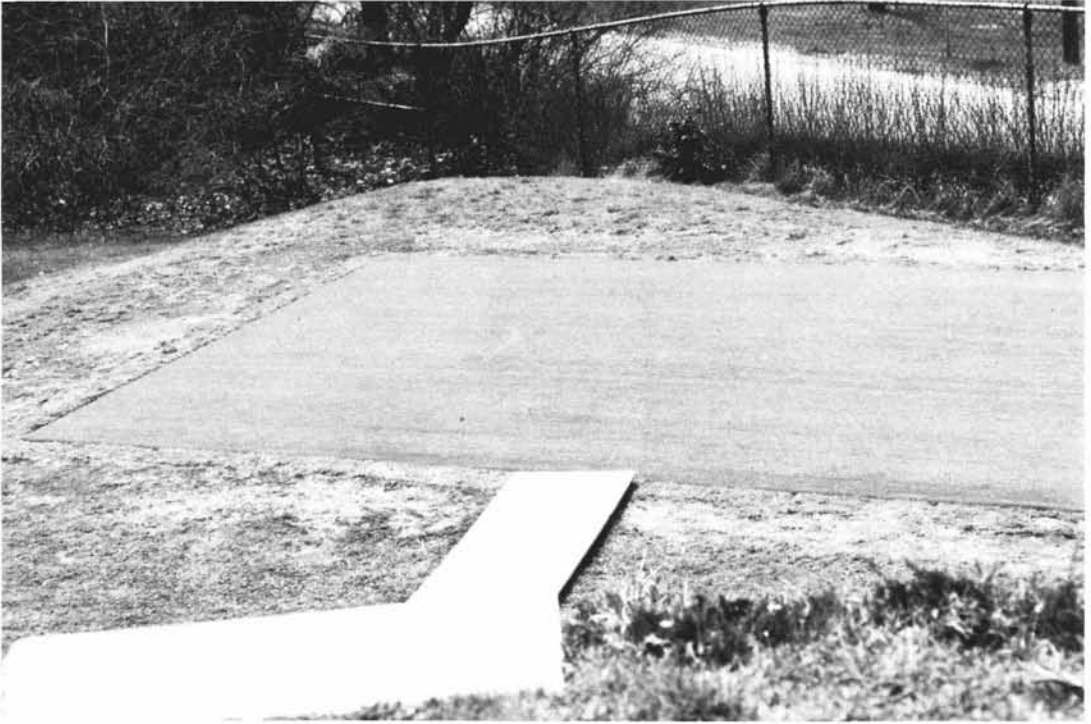
Agronomic Requirements

No matter how good a tee may look once it has been built, it is not worth the time and effort expended to build it if you cannot grow grass on it. A tee must be well drained. If not it will compact easily, grasses will be shallow rooted and it will be impossible to keep the tee looking good for the entire season. Therefore the topsoil mixture shall be composed of a sandy soil. The top mix for tees should be at least as sandy as the putting green mix. The ideal teeing surface is firm without being compacted.

Sand particle size has come under close scrutiny in the refined putting green specifications published by the USGA Green Section. These same specifications hold true for tee construction as well as green construction. No more than 3 per cent of the sand should be two mm or larger, and no more than 7 per cent of the sand should be between the one and two mm size. At least 65 per cent of the sand should be between 0.25 mm and one mm in size, and not more than 25 per cent of the sand should be smaller than 0.25 mm. A very important point

Tees must be located to enhance the hole and permit easy traffic flow around the tee. Better planning of cart paths is needed in this area.





This tee is made of sand covered with artificial turf when all else failed.

is not to have more than 3 per cent clay or 5 per cent silt in the sand mixture. In most areas a mason or brick sand will meet these standards. By using the smaller size sand particles and higher percentages of sand, the water infiltration rate can be increased to an ideal range of four to six inches per hour *after* compaction. At this rate it is possible to have a firm, dry tee which retains enough moisture to support the needs of the turf.

As previously mentioned, internal drainage in the topsoil mixture is important but subsurface and surface drainage is essential. Good surface drainage will keep water from accumulating on the tee, while subsurface drainage will remove water passed through the soil by internal drainage. In the opinion of the author, the biggest cause of poor tees is poor drainage. Subsurface drainage should be installed in the same manner as drainage under greens is installed, i.e. a drain line surrounded with pea gravel (1/4 inch stone) and leading to an out-of-the-way traffic pattern outlet. Surface drainage can be easily supplied by gently sloping the surface of the tee. A 1-1.5 per cent grade in any direction away from a high bank can be done easily. The main concern is, do not slope the tee's surface so that surface water becomes trapped against an embankment, a cart path or something of this nature.

Air and light are essential for good turf growth on tees. The area around the tee must allow for good air circulation and several hours of sunlight each day. Oftentimes tees are located back in "chutes" or "holes" in the

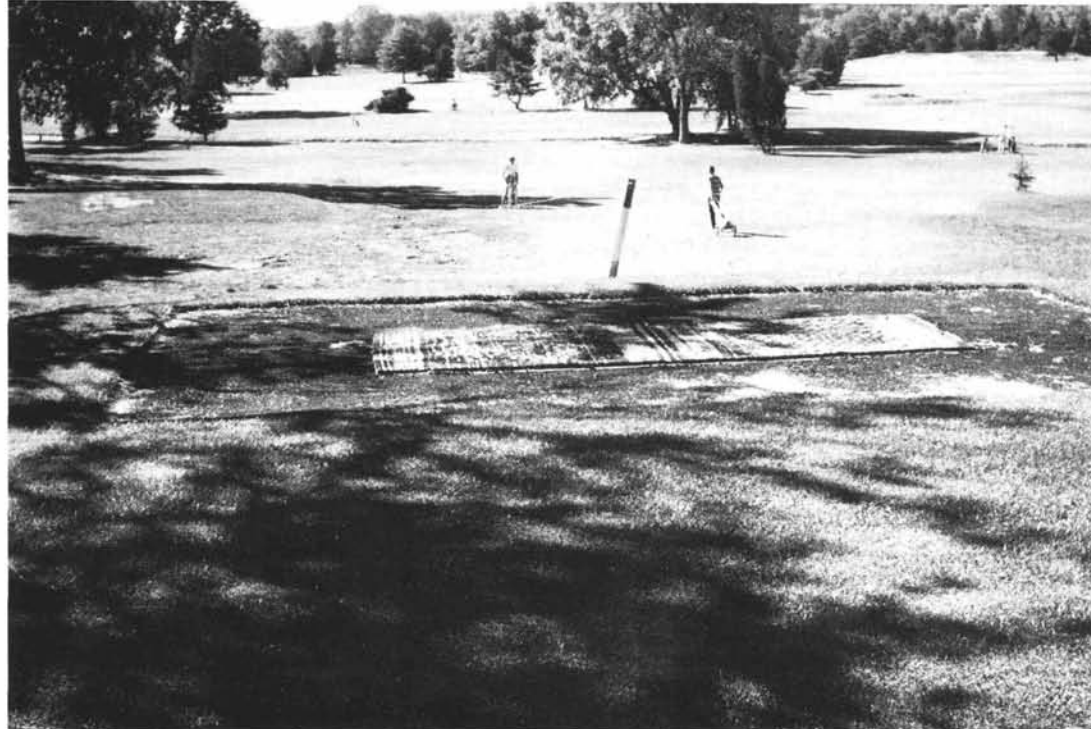
woods where sunlight is very limited and air movement is practically non-existent. When this situation exists, how can one expect the grass plant to survive under close cut and concentrated foot traffic?

Although the mowing heights are usually higher on tees than on greens, tees are mowed frequently. Tees must be considered high maintenance areas. The fertilization level should be slightly higher than greens in order to make rapid recovery and to stand up under traffic stress. Although we need vigorous growth on tees, we must irrigate them less to provide the golfer with a firm footing. Proper tee irrigation is a very exacting operation. The grass must receive enough water to survive, but the water preferably has to be off the surface when the golfer arrives. Courses with large tees have an advantage in this respect, because they can irrigate portions of the tee not in play and leave that portion in play without water.

Aeration and top-dressing is important to tee management. Aeration should be a regularly scheduled practice to relieve compaction and to aid in keeping the tees level.

Construction

Tees have been and will continue to be built in strange places. About the only thing stranger than the location of many tees is the material from which they have been built. Tee foundations have been made from anything from garbage to metal scraps to tree stumps and to (very popular) dredge material from ponds and swamps. Regardless of the material used to



The front portion of this tee is asphalt with rubber mat.

elevate the tee, there must be a level surface on top with a slight slope for surface drainage. Once this point is reached, proceed as you would in building a green. Install the subsurface drainage line, and add the prepared topsoil.

The topsoil layer must be a minimum of 4 inches thick after compaction, but a 6-inch top layer is better. The topsoil mix should be prepared off-site.

The ideal tee, of course, would be one built to the USGA Putting Green Specifications. If this method is used, the Specifications should be followed exactly as outlined.

Limited Space

The increase in play makes it necessary to have larger tees. The amount of golf being played on many courses is simply too much for the present tees to bear. Therefore larger tees are needed. Where confined conditions exist, it is ever so much more important to make the top mix right for tees. Sometimes a tee can't be lengthened but can be widened, possibly by removing trees. Another alternative is to make tiered or multi-leveled tees one level. This increases the amount of *usable* teeing surface and allows more frequent tee marker rotation.

A solution that many courses refuse to consider is that of lengthening the tee by shortening the hole. This may not meet with favor with members at first, but the loss of distance can be compensated for in many ways: (1) the fairways can be narrowed; (2) the size

of the green can be reduced; (3) a well-placed fairway bunker could make the new short hole very challenging; or (4) a well-placed grouping of trees or a "specimen" tree could enhance strategy. More often than not we are only talking about 5-10 yards. Many times, after the initial shock of thinking about the hole being shortened has worn off, the above solutions will not be necessary anyway.

When all else fails, the only remaining solution is periodic resodding or seeding of the tees. The first thing necessary, if you are going to sod, is to have your own nursery so you can choose the type of soil and sod you wish to grow. Then you can allow play on one portion of the tee while another portion is being sodded. The other alternative is to rope off the front 10-12 feet of the tee, keeping the markers in this area while completely renovating the back portion. Strip the sod, loosen the top inch of soil, firm and level, and then reseed. As soon as this area is established, repeat the operation on the front of the tee.

These solutions are not a replacement for a tee of proper size but they certainly can help with problem tees. Many times problems on tees can be solved by critical examination of the area around the tee. As years go by, small shrubs grow larger, trees overhang more, and drain lines become plugged. If these things are kept under control, tees can then receive the light, air movement and water movement so necessary for survival.