New technological methods have made leveling a tee surface faster and more reliable. Reconstructing tees by a laser-guided grader produces an accurate final product.

Tee Construction: Use of the Laser Grader

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SURFACE SMOOTHNESS of golf tees is a desirable characteristic that aids the golfer in addressing and driving the ball. A smooth surface ensures a level and balanced stance during the execution of the tee shot, necessary for delivery of the golf club along the desired path to hit a long and straight shot. Unfortunately, unlevel tees are all too common on golf courses.

Given the amount of golfer traffic today, and the resulting divots and surface compaction, it isn't any wonder why tees become uneven. The purpose of this article is to discuss a quick and reliable method of reconstructing unlevel tees.

Historically, tees often have been built by simply using the native soil from the golf course property to form these features. Internal drainage lines and modified root zone materials have been used only occasionally. This construction system works fairly well as long as the tees have adequate size and receive adequate sunlight and routine maintenance. Nevertheless, depressions or undulations generally occur over a period of time, requiring rebuilding to correct.

Traditional methods of rebuilding using I-beams, grader boxes on small tractors, concrete forms, and transits are time-consuming, and depending on staff size and demand for the playing surface, a tee may be closed for months. A faster, more reliable method is available and is more popular with both golf course superintendents and golfers alike.

In the South, golf course superintendents have significantly reduced the time required for tee reconstruction by abandoning old technology for new technology. The golf course staff does practically all of the preparation and most of the finishing work, except the final surface leveling. A skilled contractor does the most difficult step, which is leveling the tee surface, using new laser leveling equipment. A skilled laser operator can level an average-size tee in 45 to 75 minutes. Traditional grading methods can take as long as eight to 16 hours. The degree of accuracy achieved with the laser-guided boxblade is equal or superior to any other method. Preparation of nine tees prior to final leveling by the laser contractor requires three to four days. The following steps typically are required:

Establish a Temporary Tee

Find a level site (approximately 200 square feet) in front of or next to the existing tee. Mow down the area to tee height and topdress. Establish this site in advance of expected construction work to minimize mower scalping. Fortunately, one advantage of this method is that golfers will be forced to play from the temporary tee only for a short time.

Realign the Tee Edges

A psychological correlation seems to exist between alignment of the teebox to the target area and how the golfer tends to line himself up with the edges of the tee. Obviously, proper tee marker positioning facilitates the proper alignment to the target area, but many golfers use the edge of the tees for this alignment. Before reconstruction work begins, readjust the mowing pattern on the edge of the tee to align it with the fairway. Next, install stakes on the actual corners of the tee for alignment purposes. Attach string to the stakes parallel to the direction of play. Stand on the tee again and adjust the mowing pattern and strings to achieve the desired tee alignment. Prior to leaving, shift the stakes onto the bank of the tee at each corner, approximately 15 feet from the site of the new edge. The stakes and string later will serve as guides for the laser grader operator.

Strip the Sod

Strip off the sod accurately from the tee surface with a sod-cutter set approximately 1 to 1.25 inches deep. An extra pass over the tee surface with the sod-cutter sometimes may be necessary on older tees with more thatch. Remove the sod on the tee surface, working perpendicular to the direction of play if you wish to reuse the sod; otherwise, any direction is fine. Next, remove the sod from around the edge of the tee, approximately 4 to 5 feet down the tee slope. If sod will be reused, roll and store it in a shaded area by the tee. Another option is to lay the sod flat on plastic or plywood and syringe frequently.

Tilling Considerations

Clay or compacted soils may require shallow tilling to produce the friable material necessary for final grading. Adjust a tractor-mounted tiller to a 3- to 4-inch tilling depth and thoroughly loosen the soil. Tilling to greater depths is a common error that increases your chances of surface settling at a later time.

After tilling, rake the area to remove soil clods, thatch, tree roots, or rocks. Haul this debris away. In compacted soils, a Verti-Drain treatment, either before or after tilling, will help to relieve deep subsurface compaction. The Verti-Drain will penetrate approximately 10 inches into most compacted bases. Incorporating sand topdressing into the aeration holes will help facilitate drainage as the water reaches the base of the tee.

On sandy soils, tilling may not be necessary. Nonetheless, spot-tilling isolated compacted areas may be required, and having a hand tiller available is helpful.

Using washed sod or a sod grown on a similar soil reduces the likelihood of problem-causing layering within the soil profile.

Add Root Zone Material

On most well-drained soils, simply dump 2 to 3 cubic yards of root-zone-quality sand or a sand/organic mix over an average-size tee (approximately 1½ to 2 inches deep). This sand or mix will provide a good surface on which to establish the sod. On poorly drained soils, adding new root zone material (up to 6 inches) would be beneficial. Refer to the chart (Figure 1) to estimate the amount of material needed based on the root zone depth and tee size. During reconstruction, it may be desirable to elevate the tee surface to improve playability. This can be accomplished by adding fill to the base or by adding root zone mix. Before adding 2 inches or more of root zone mix, it is essential to grade and compact the subbase to prevent settling. A laser grader is the fastest and most accurate machine for this step. Usually, new root zone material with an infiltration rate of between 2 and 6 inches per hour would be considered adequate for tees.

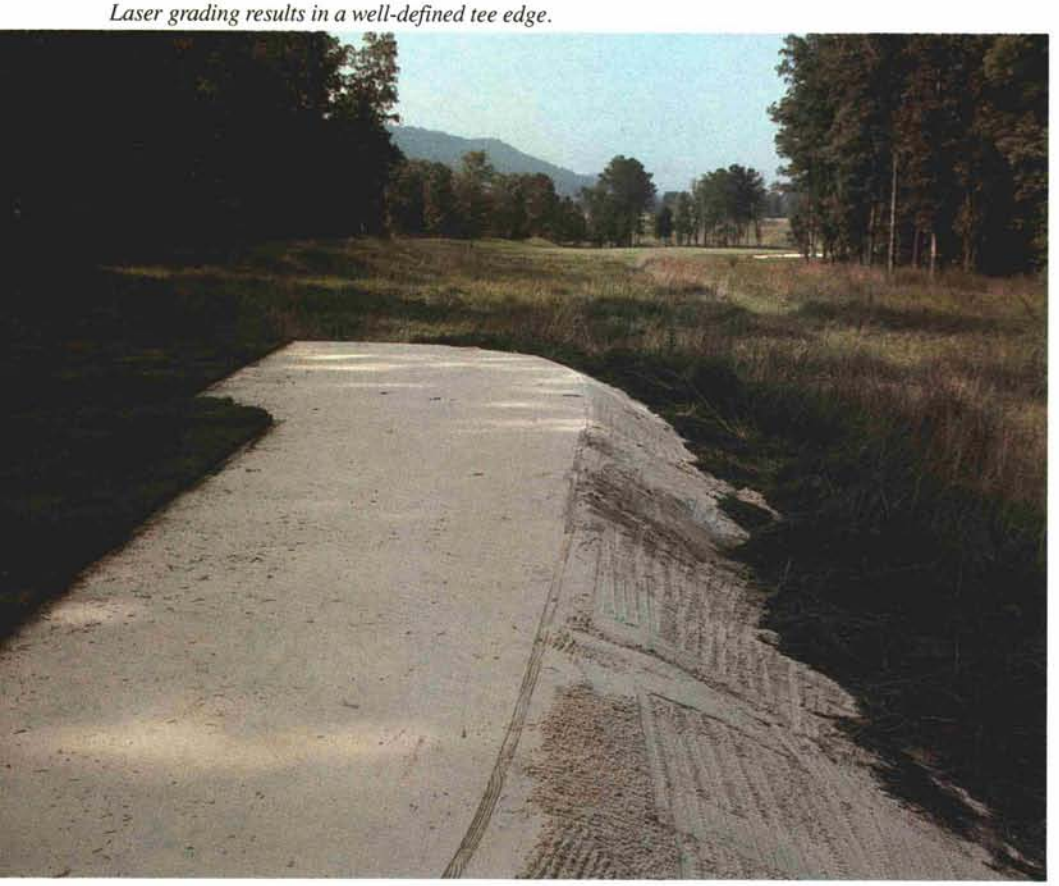
How to Obtain a Level Surface

Many golf course superintendents in the South are familiar with laser grading technology, and several local contractors now have this equipment. It is important to investigate the type of equipment used, since certain equipment may be more accurate, and to examine the degree of experience of the operator. These factors will affect the quality of the finished product and how the tee blends into the surrounding landscape. The cost is approximately 10 to 15 cents per square foot. It is possible to level even very small tees with this equipment.

Laser grading enhances the playability of the tee in two ways. As a general guideline, tee surfaces follow the contour of the fairway. For example, elevated fairways dictate an upward pitch sloping upward from back to front. Secondly, a laser grader also can establish fall from side to side. On dogleg holes, a draw or fade will be encouraged with a slight pitch to either the left or right. The laser contractor should work with the golf course superintendent or golf course architect to decide the pitch and side fall for each tee.

As mentioned previously, water infiltration through the root zone mixture is important, but surface drainage is essential. Surface drainage will prevent water from accumulating on the tee surface. Usually, a .33% to 1% fall is satisfactory for an average tee, but the surrounding landscape should be considered. Establishing such a small slope for good surface drainage is easily done with a laser grader. The tee surface will appear flat at a pitch of 1% or less. A consistent pitch from tee to tee isn't necessary since these small percentages are undetectable to the eye. Surface water always should be directed away from heavy traffic areas, cart paths, and any high banks at the rear of tees.

Laser grading results in a well-defined tee edge.



New Tee Additions

It is very easy to add teeing ground to existing tees during the project. Begin by installing extra fill according to availability. However, care must be taken so that the "add-on" blends with the existing tee both in terms of grade and soil. A laser grader easily blends the new tee surface into the existing tee surface, a difficult task with other methods. Normally, the size of most tees increases by 5% to 10% since the outer edge of the tee generally will be 1 to 1½ feet wider after grading is complete. Establish new edges after grading by lightly hand raking and feathering the root zone into the existing contours. For additional width, add more root zone mix to the edges.

Resodding

The tee surface and slopes are ready for turf establishment after laser grading. Unlike other methods, no touch-up work is required prior to grassing because the base created by the laser is perfectly finished. If time permits, water the graded surface for several days to promote settling. Next, sod, sprig, or seed the tee surface and sod the tee banks. If you choose to sod, avoid using a sod grown on a different or incompatible soil. This is especially true with cool-season turfgrasses. Drainage and rooting may be seriously impaired otherwise. Using washed sod or sod grown on a similar soil will reduce the likelihood of having to deal with a sod layer. Surface irregularities will occur due to the variability of the sod pieces, but the faster establishment is a tremendous advantage compared to seed establishment. Topdressing after sodding will smooth any irregularities. If sod grown on a clay soil is used, plan on establishing a coring program to break up this soil layer.

Conclusion

A level tee increases the ease, comfort, and relaxation of the golfer during the tee shot, and the golfer looks forward to teeing up on a surface that enhances his game. Laser grading technology allows for a superior surface in minimum time. Any way you look at it, the course comes out on top with level tees.