Laser technology makes tee grading job easier

Computer model man Ed Connormakes it again

By Mark Leslie

The man who brought you the computer terrain model to preserve historic golf courses has introduced another technology to the world of golf course construction. Move over, stakes and grade lines. Come on down, laser emitters, gyroscopes and radio-controlled drag scrapers.

"Golf course managers are coming out of the woodwork to look at it," said Edward Connor of the laser equipment he has now used to grade tee areas at Pebble Beach Golf Links in California and Seminole Golf Club in Florida.

Speaking of his current work at two Nashville, Tenn., municipal courses, Connor said: "We've got 120,000 square feet of tee space here. We lasered it and laid a two-inch layer of sand over the top and lasered it again in three days. "It used to take me at least a month for that kind of work."

Connor predicted the industry would see the laser gear used as a standard of construction in the future. "It's just too good for one guy to have as a secret for very long... It's one of the best tools I've ever seen for new construction or renovation," he said.

As important as speed is to the equation of rebuilding tees, precision is even more crucial, according to Connor.

"The big advantage is that it allows you to do what the agricultural people have been doing for years when they flood-irrigate large fields. It allows you to put any grade within uniformity on a surface like a tee," he said. "Once you get over a three-percent slope the people standing on the tee can feel it... But to grade less than three percent has always been a problem. You run into the danger of pockets. And when you get down to one to two percent, the threat of pockets becomes significant. Naturally, you don't want anything that holds water or presents an uneven surface."

For years architects have often opted to build a crown onto the tee and "live with some unevenness rather than risk getting a pocket..." Connor says it's not worth the risk.

Ed Connor, above, sets readings to guide his box blade, right, or an uneven settlement spot," Connor said. "We've gone a long way in eliminating that problem. We can grade tees very confidently at one percent or even half a percent. And it's so fast that one man can do what used to take a crew of five people.

"If you don't have a laser you have to have a gun and a rod. That takes two people and it's tedious. It's moving a little bit of dirt and shooting with a gun and moving some dirt and shooting it again. With the laser you do everything from the seat of the tractor — from adjusting the height of your target to adjusting the slope if you find out you entered in the wrong degree of slope into the laser."

Connor added: "All of my construction career I've been taught to avoid straight lines and formal features on a golf course to simulate nature's random look. Tees, however, demand precise construction methods."

HOW IT WORKS

Connor's equipment includes a tractor, scraper blade and laser apparatus. A laser emitter — with a gyroscope to automatically level it — is mounted on a tripod and set upon a neighboring hillside or even on the tee. The laser receiver is mounted on a "mast" built onto the blade apparatus.

Connor sets perpendicular and parallel axis grades on the emitter's digital readout. He then sets the speed of his laser emitter at around 20 revolutions per second, "which gives me the quick enough response that my blade won't float out of position."

The emitter rotates on the plane he established to within one-thousandth of a percent, and sends a signal to the receiver, which is attached to the scraper on the tractor. The scraper blade is hooked into a six-way hydraulic valve that is attached to the receiver.

"It used to take me at least a month for that kind of work (that took three days with laser technology)."

— Ed Connor

It's most frequent and common use is in agriculture where they have to pull a grade over a field for a couple of raisers. It's no big deal for old farmhands, but we sophisticated golf course builders just caught onto it this year," he joked.

"We try to grade tees in conformance with surrounding terrain so the tee doesn't look like it's artificially constructed. But if you're going to slope, the green has to slope in the same way you want your tee to slope, but not severely... because everything over three percent is noticeable," Connor said.

"If I try to get a zero grade from side to side, or an uphill grade, I'll try to go one to two percent from back to front or front to back, depending on the natural grade."

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