



Preliminary rough grading of the Graeagle Meadows golf course greens and tees involved spreading fir bark four inches deep over a 14-inch layer of washed sand. The bark replaces peat.



The sand-bark process calls for rotovating the sand and bark to a two-to-one mixture for a depth of eight inches. The construction method was developed by landscape architect Ellis Van Gorder.

California Course Builds

Sand/Bark Greens And Tees

GRAEAGLE Meadows, a recently completed 6,700-yard, 18-hole championship golf course in the heart of the Sierras in Graeagle, Calif., boasts a new method of tee and green construction.

Ellis Van Gorder, golf course architect, who designed the course, which averages 4,800 feet above sea level, calls the process "Sand and Bark" construction. The process is unique, he says, because fir bark "fines" are used in place of conventional peat.

According to Van Gorder, the process is faster and saves labor costs. The technique results in a more uniform surface, makes possible more even mixing of ingredients, and because of the product's excellent water retention value, results in more uniform seed germination. Because the bark is weed-free, the customary maintenance problem is almost completely eliminated.

Although Van Gorder has used the method before on such projects as Makaba Golf Course in Hawaii, and Peacock Gap Golf Course in San Rafael, Calif., he said the technique is not well-known.

"Primary shaping and contouring is done using existing soil," Van Gorder explained. "Normal care is given to promote proper drainage to avoid impounding water areas. Clean sharp sand is then laid on to a depth of 14" and rough-graded to the specifications of each putting surface. If an overabundance of silt is present, then washed sand would be desirable. A 4" layer of 3/8" fine fir bark is then spread over the entire putting surface. This is done with a conventional scraper and

rough-graded again to the contour of the final green.

"The combination of bark and sand is then rotovated to a depth of 8" using extreme care to get a uniform mix. Each 4,500-square-foot green requires about 70 yards of bark. After rotovating, the surface is tractor-graded and rolled to final contour, then raked and dragged by hand to the final putting surface.

"Greens are then seeded 2 1/2 pounds per thousand square feet with a high-grade, weed-free seed mixed with a 10-10-10 combination of fertilizer (10 lbs. per thousand square feet) and 20 pounds of milorganite.

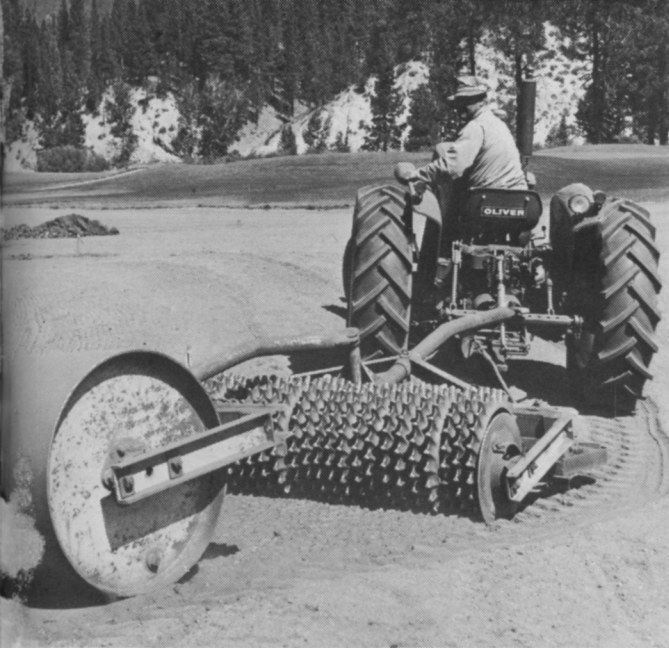
"The area is rolled again then kept moist during the entire germination process, from 14 to 21 days, depending on climate and atmosphere."

Van Gorder emphasized one advantage of fir bark at this stage. Because of the material's inherent water retention, he noted, bark is easier to keep moist, requiring fewer hours of watering. Because of the texture and bulk of the bark, compacting does not occur until well into the germination period. Although Graeagle has an ample and economical supply of water, this feature is particularly important in areas where water is expensive or in short supply.

Carl DellAquila, contour landscape grader, who has engineered such projects as the Palo Alto Muni Golf Course, Peacock Gap Country Club and Palo Alto Hills Golf Club, and the contour grader at Graeagle Meadows, cited some side ben-



Harvey West, Jr. (right), developer of Graeagle, a vacation and retirement home community in Plumas County, California, discusses the sand-bark turf construction method with Carl Dell Aquila, contour grader.



Rolling is accomplished with this equipment. The 18-hole championship golf course winds around a natural pine forest at an elevation of 4,800 feet.



Just prior to seeding, the greens and tees are hand-raked. Note the even texture and uniform pattern, a condition difficult to obtain with peat-type products.

efits on the sand-bark process. "One obvious benefit" he said, "is that we can tractor-grade the bark throughout the entire process. With peat, it's strictly 'by hand.' Peat bunches up under the blade and it's almost impossible to get a uniform texture unless you mix and fill completely by hand, through

'off site' mixing method. "This sand-bark method obviously saves time but it also gives a better surface with less raking and dragging by hand."

While bark used at Graeagle was obtained locally at the Feather River Lumber Company, in Loyalton, Calif., the company plans to mar-

ket the product nationwide, in both bag and bulk quantities. It will be handled through the special products division of the R. F. Nikkel Lumber Company, Sacramento, Calif. Nikkel also plans to market a line of bagged "decorative" fir bark products for sale through retail outlets and nurseries.

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GOLF COURSE



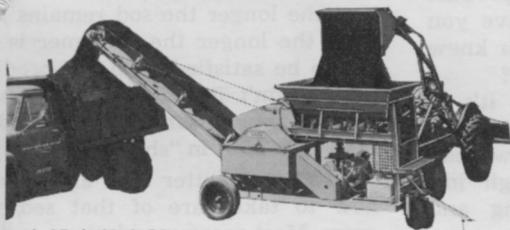
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GREENHOUSE



ATHLETIC FIELD



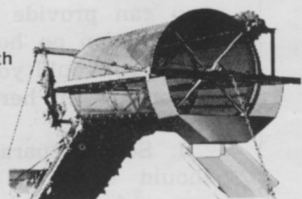
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