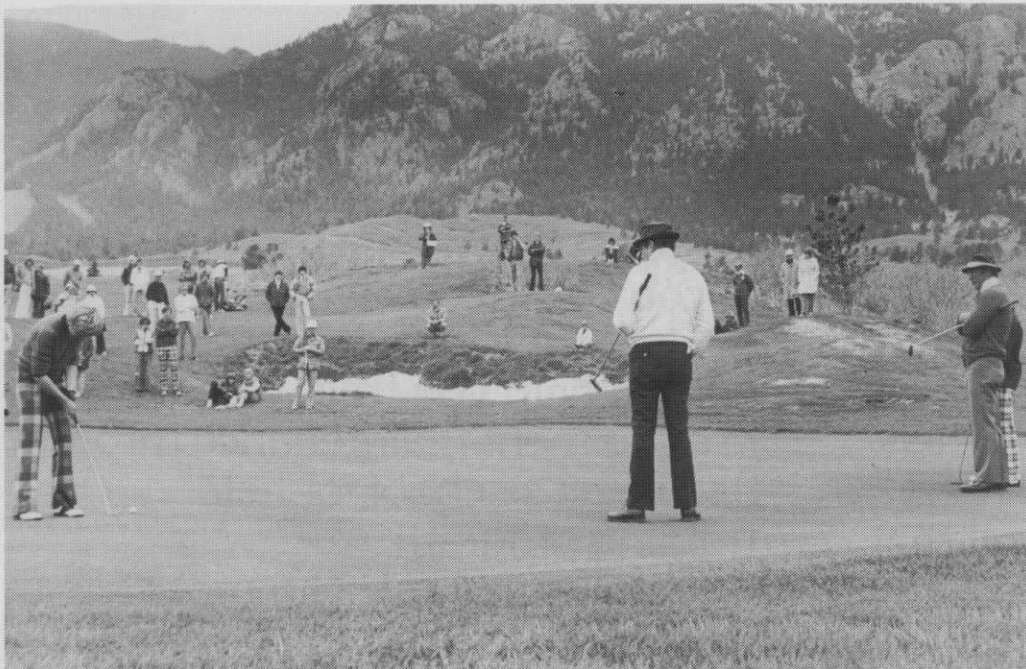


## Mountain course greens up quickly thanks to seed, sod, and irrigation



Cynthia Hill holes out on opening day at the New Broadmoor South course while Dow Finsterwald (white sweater) and Arnold Palmer look on.



Broadmoor employees did supplemental jobs on course construction (such as filling traps with sand) to hold down labor costs.

Chuck Clark did everything but move mountains to build the new \$2.5 million Broadmoor South golf course near Colorado Springs.

Clark, director of golf courses at the Broadmoor Hotel, supervised construction of the 6,935-yard course, which was designed by architect Edwin B. Seay in collaboration with Arnold Palmer. It was dedicated last spring, 30 months after construction began on a rugged mountainside overlooking the resort's other two United States Golf Association-approved courses.

"We came out like champs," Clark remarked while a foursome containing Palmer played the course on opening day, "but it wasn't a bed of roses. The terrain, our climate, and special irrigation problems stalked us every step of the way."

Palmer and teammate Nancy Roth Syms, reigning British Amateur cham-

pion, won in matchplay against Broadmoor club professional Dow Finsterwald and Cynthia Hill, 1974 U.S. Women's amateur champion. The dedication event was played in 40-degree temperatures.

Palmer told newsmen an "improved lie" rule need not have been invoked. Despite firing a two-over-par 74, the aging four-time Masters Champion praised the course's playability, especially since turf had been seeded less than a year earlier. Ninety-eight percent of the nascent turf survived Colorado's harsh winter and roots had penetrated 5 to 7 inches deep by opening day.

### New grass for greens

Broadmoor South is the first known U.S. course with greens seeded entirely to Emerald creeping bent grass. The new variety, perfected in Sweden, is bred from a single parental plant; other creeping bents are poly-crossed varieties. Single parentage reportedly gives exceptional uniformity.

"When a putt breaks on our greens it's because of land contours rather than grain," Clark commented.

Seay, president of the American Society of Golf Course Architects, designed the course so none of its 18 holes goes directly up or down hill except the dogleg first fairway. The course "tracks" across the Ponderosa pine, Douglas fir, and scrub oak wooded hillside much the way railroad engineers build switchbacks to traverse mountainsides. Natural ravines crisscross 10 fairways.

The small greens (average: 5,500 square feet) are guarded by 86 sandtraps plus mounds and natural precipices, which usually channel long errant shots down into rocky gullies. Seay skillfully substituted man-made mounds for heavily bunkered greens to give handicappers relief from their fear of sand shots without compromising the par golfer's challenge.

Clark elected to put down Baron bluegrass sod rather than seed on slopes skirting the greens. The reason, he explained, was to prevent bluegrass seedlings from washing away and contaminating his Emerald bent greens. Overhangs flanking any greens or tees were left in their natural condition, but were reinforced and

*Workers cut out a drainage lake at the new 6,935-yard course in Colorado Springs.*



terraced with rocks.

"In the short run sod cost more than seed," Clark said. "But over the long haul it's been money in the bank. By buying sod we didn't have to continually go back in and redo the job every time it rained."

Erosion control also was Clark's first priority when the turf management graduate from Colorado State University carefully selected fairway grass varieties. Deep ravines and steep slopes, coupled with the ominous threat of spring thunderstorms swooping in off the mountains, mandated a quick cover. Fairways on the stately resort's South links were seeded to a mixture of 20 percent Pennfine ryegrass plus Baron Kentucky, Nugget, Fyking, and Adelphi bluegrasses.

Thanks to Pennfine and the four bluegrasses, Clark noted, a good ground cover "was achieved within 2 weeks. Furthermore, to prevent seeds from washing down inclines, a 40-member crew hydroseeded steep slopes throughout the course. Workers mixed seed with wood-fiber mulch and put Terra-Tack plastic binder into mulch to make it more water resistant

by binding the mulch together. The mixture was blended into a water slurry and sprayed onto contoured fairways with high-pressure guns.

#### A thinking golfer's course

One of Seay's hallmarks is to keep earth moving to a minimum within the limits of fashioning a playable course. So the 38-year-old architect, who is remodeling Cherry Hills for the 1978 U.S. Open, worked closely with Broadmoor officials to sculpt a traditional golf course out of solid rock without desecrating the terrain.

He employed key fairway cuts, existing ravines, and strategically-placed mounds to vary land contours widely, thus creating a course demanding finesse and shot control rather than uncompromised length.

Gundersons Inc., landscape contractors headquartered in Rapid City, S.D., met Seay's exacting demands in reshaping the topography at Broadmoor South. Site preparation embraced 18 months. Laborers cleared unnecessary timber, moved 600,000 cubic yards of rock, and hauled in more than 100,000 cubic yards of topsoil from a nearby dairy farm. Massive boulders were blasted into small pieces so Caterpillar tractors could move them.

The Broadmoor Hotel, general contractor on its own project, saved an estimated 20 percent in costs by providing supplemental labor and by serving as purchasing agent. Those savings helped offset inflation that swelled the project's cost beyond initial projections.

#### Summer and winter irrigation

The picturesque course's 250-foot drop in elevation, along with the unusual weather conditions on the mountain-side, required installation of two separate irrigation systems. There are no pumps, and both systems tie into two 18-million-gallon water reservoirs

nestled in the mountains high above Broadmoor South. The pull of gravity requires seven 8-inch pressure reducing valves to keep water from building up too much pressure within the main line.

Both irrigation systems contain more than 17 miles of flexible Certain-Teed pipe, 800 valve-in-head electrically activated sprinklers, and 85 miles of electrical cables.

Greens, tees, and fairways are watered via the primary irrigation system. It encompasses an underground polyvinyl chloride pipe network gradually ranging downward from "oversized" 12-inch to 2-inch capillaries. Due to oversized pipe, Clark said, he can water the course and syringe greens simultaneously without sacrificing water pressure.

The secondary irrigation system contains smaller 6-, 4-, and 2-inch polyvinyl chloride pipe. It enables Clark to water greens and tees during the winter while providing backup protection in case of prolonged power failure. Furthermore, since the system is looped and fed from two directions, Broadmoor South can be watered even when the main breaks.

Damage to greens at courses throughout Colorado Springs usually occurs in the winter and early spring when cold, dry winds parch plant crowns. Broadmoor South's greens are constructed of 85 percent sand blended with other organic materials. Although the specially-screened mixture meets USGA filtration standards, Clark added, turf on sand-base greens is even more susceptible to desiccation.

"That is why I wouldn't trade all the tea in China for my winter irrigation system," Clark quipped. "Sure, we could have squeezed by with an irrigation system costing \$45,000 less, but initial capital outlay doesn't necessarily reflect the actual bottom line in this business. It's sometimes difficult to put a price on quality." □



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