one million-dollar challenge

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BEFORE THE FIRST golfer pitted his skills against the 6,607-yard-long All Seasons Country Club Golf Course, the Robert Trent Jones-designed complex already had proven itself a solid adversary.

The championship course did so almost daily throughout the 3½ years it took to sculpt it out of 100 acres of shale and flint rock along the shore of the Lake of the Ozarks in mountainous southern Missouri. Construction of the $1-million project reads like a page from Ripley's "Believe It Or Not."

Although carving the 71-par course from solid rock was the greatest challenge, our first obstacle was to clear away 150 acres of timber. However, we salvaged trees that framed or separated the 18 holes along the course's ridges, inlets and bays.

It took a year to clear the wooded land. Trees were bulldozed down and hauled away after being cut into small pieces with chain saws. Tree stumps were burned and the debris also was hauled away.

Once the land had been cleared a crew of 50 men began shaping it into the golf course Robert Trent Jones had envisioned. The first step was to level or deepen the land by blasting with dynamite. We did so because the course had been designed so every green would be visible from its tee-box.

It took almost seven months to reshape the topography and almost every hole was altered by blasting. On the 17th fairway, for example, workers blasted away almost 14 feet of solid rock.

The next task was to dig ten miles of trenches to install our Binar automatic irrigation system. We used a trenching machine and bulldozer to dig the trench in shale, but needed dynamite to rip through flint rock. A crawler-type drill punched holes in the fairways for the charge and the explosions produced a jagged trench. After cleaning the trench, we laid underground irrigation lines and packed them with sand and pea gravel so expansion of the pipe would not shaft it against the rocks.

We purchased and hauled in more than 120,000-cubic-yards of soil for the fairways. We purchased the dirt from a catfish farmer seven miles away who wanted his pond cleaned. We drained the pond, let the bed dry out in the sun and then cut a foot of silty, acidic clay soil from the bottom.

Because soil in the Ozarks has a high clay content and is acidic (4 to 4.8 pH), we put down six to eight tons of agricultural lime per acre. We added the lime by discing it into the soil, mixed it well and harrowed it. Incidentally, soil samples taken in mid-August ranged from 5.8 to 6.5 pH so the lime apparently has buffered our soil.

It cost $250,000 to acquire and haul the soil. Six trucks hauled earth around-the-clock in two ten-hour shifts from May through November 1973. Dirt was spread just prior to seeding to prevent unnecessary top soil erosion.

The greens construction was more conventional, because they were designed to conform to United State Golf Association specifications. Greens were under-drained with plastic corrigated drain on top of which we had 4 inches of gravel. Then we applied 12 inches of mix and followed the rough contours laid out by Jones and his men. The next step was to board-float the greens behind a sandtrap rake.

Jones suggested that we not use soil in our mix. The mix we used was 80 percent sand and 20 per cent peat and the greens are beautiful. In my opinion, a sand and peat mix gives great drainage and aids in deep roots. For example, our root depths ranged from eight to ten inches this year. In constructing the greens, we had to haul in 8,000-cubic-yards of sand and 1,600-cubic-yards of peat. We purchased peat from Northern Indiana.

We mixed seed with wood-fiber mulch and put plastic binder into the mulch to make it more water-resistant by binding the mulch together. We initially applied an agricultural fertilizer (12-24-12) on fairways, greens and tee-boxes to aid growth.

The mixture was blended into a water slurry in a 3,000-gallon tank mounted on a truck. The mixture was pumped onto the fairways with a high-pressure gun. Then we watered 15 minutes every two hours. Because the seed had to germinate in mulch, we continued the watering program two weeks. Incidentally, thanks to rye and the bluegrass varieties, we obtained a ground cover within a week.

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CHALLENGE *(from page 10)*

We hydro-seeded the course to control erosion, to help get a fast turf cover, and because it does a better job inside bunker lips that are difficult to seed with a drill. Fairways were seeded with a mixture of Baron, Fylking and Park bluegrasses plus Manhattan ryegrass. We planted Penncross on the greens and Exeter Colonial bentgrass on tee-boxes. However, I also seeded several championship tees to Zoysia and am pleased with the result.

We also hydro-seeded the inside of traps. When we returned later to clean our traps, we cut the sod out and placed it along slopes that had been washed out by rain runoff. Thus, the sandtraps served as "mini-sodfarms" while saving labor.

We top-dressed the greens with our sand and peat moss mixture to avoid a layered effect. We used small layers of top-dressing and dragged them in with a Ryan dragmat. As grass emerged, we fertilized the greens with 20-0-16 greens fertilizer and then top-dressed them again. While top-dressing, we cut the greens at 5/16 inch and gradually lowered the height to 3/16 inches before opening the course.

A Caterpillar tractor clears away rock as workers sculpt the Jones-designed golf course out of 100 acres of shale and flint rock along the shore of Lake of the Ozarks.

We seeded in October and early November. Seeding in late fall was a gamble, but it paid off because we had a mild winter and very wet spring. In order to have the course playable for a tournament last May, we used a single-engine airplane to lightly fertilize the course in early March with 30-3-10 to foster rapid growth.

The airplane was necessary because 15 of our fairways had filter six inches deep and had not had time to set. Thus, the course was too soft to be fertilized by ground. We fertilized the fairways again in late April by ground with 19-5-7.

Selecting grass varieties was no simple task, because our course is in the Transition Zone where even individual slopes have their own "micro-climates." We put down five grass varieties with the hope that some of them would take to the soil with extra water, lime and fertilizer. Late this summer we overseeded our fairways with Baron with good results. Zoysia also has fared well and we are thinking about converting to it on fairways next year instead of bluegrass. Zoysia is inexpensive to maintain because it requires less fertilizer, is drought re-

sistant and grows so slowly it needs less mowing.

Another problem we experienced was acquiring sand to fill traps. The nearest suitable sand was 50 miles away along the Missouri River near Jefferson City, Mo. It took four months to complete trap construction and we hauled in 3,000-cubic yards of sand from the river. We used a small skid-loader to clean out the traps. By working an entire trap out from the inside, we avoided any damage to the fairways.

Because our course is bisected by a paved roadway (Missouri-HH), we had to construct a $35,000 tunnel under it for safe access to the 12th, 13th and 14th holes by our Cushman golf car fleet. The first step was to develop a detour. Then we build part of the 8 x 10-foot reinforced concrete tunnel before repaving the highway.

Building the course was a challenge, but Koplar Enterprises backed me with the best materials, equipment and personnel available to do the job. The course fulfilled a long-time dream by Harold Koplar, especially since Jones has termed it one of the best courses he has ever designed.

Gary Grigg, course superintendent at All Seasons Country Club golf course, checks on construction of a $35,000 tunnel under a roadway bi-secting the course.

Product Removes Thatch

A new material — called bio de-thatch — made up with micro-organisms and designed to eliminate thatch is now on the market.

It has been patented by Bio Dethatch of Louisville, Ky., and is being distributed by USS Agri-Chemicals. The product is immediately available. It has been and continues to be tested by a number of commercial and university groups.

President Julian Fortney heads the Bio-Dethatch enterprise and is working closely with USS Agri-Chemicals in getting the product introduced to the market. The marketing plans for this involve the entire USS Agri-Chemical distributor network.

Bio de-thatch is a dry-granular material that has been saturated with micro-organisms dried, pelleted, and crumbled which puts the micro-organisms into a dormant condition. When it is applied to the turf and is washed down to the soil surface or thatch build-up area it activates and feeds only on all forms of dead plant matter (plant residue) and digests the plant residue into humus (mulch) in the soil. Thatch is the accumulation of dead leaves, stems, clippings etc., that builds up between the soil surface and the green vegetation. It can be determined as to depth only by cutting a pie-shaped wedge or using a soil probe and measuring.

Morning dew is sufficient moisture to activate the micro-organisms in bio de-thatch and when activated the direct rays of the sun will deteriorate them so the watering is needed more to wash the material out of the sunlight than to activate the micro-organisms. However, during hot dry weather it is best to keep a good moisture level for approximately the first 48 hours after application because the material may dry out before it can fully activate. Once the thatch build-up area (referred to above) has been reduced sufficiently, the dry dead grass in the lawn will fall into the area where the thatch has been digested, and bio-degrade.

Best time to apply bio de-thatch is when the ground temperature is above 40° provided it is washed down to the soil surface when applied. The best time to apply is early in the spring or early in the fall because the moisture and temperature levels are the most favorable for good digestion in the shortest possible time. Bio de-thatch