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BUNKER LINER LOW-DOWN

I was surprised by two things on my first golf course construction project in 1977. The first was the amount of hand labor required to prepare a good seedbed over 160 acres. (I figured it would be done mechanically.) The second was that sand bunkers were built simply by edging out a shaped area, draining it and adding sand. Intuitively, I thought there would have to be a barrier between the sand and soil. Now, most of the golf world seems to agree.

A decade ago, liners were in the experimental stage. With use, they morphed into an expensive addition to bunkers at upper-level clubs. A few years ago, they became standard items on bid sheets, but were often eliminated if cost cutting was required. They're filtering down to just about all courses now, trading some initial cost for the benefits of easier, long-term maintenance and consistency.

I've seen many other homemade attempts at bunker liners during the past 25 years, including using PVC lake liner, cheap clear plastic from Home Depot and a host of other materials. One of the earliest widely recognized "improved bunker" techniques was the Billy Bunker, named after the former Augusta National superintendent Billy Fuller. He pioneered using a gravel blanket layer, geotextile fabric and using more drain tiles. His method has worked and has

proponents, even though the use of a gravel base never became widespread, probably because of initial costs.

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Many manufacturers jumped into the liner fray. Early products had some durability and technical problems, and each maker has released newer versions to address those problems. They're still a relatively new product, so long-term implications are unknown. However, in my experience, bunker liners are worth installing, despite the initial cost.

Unlined bunkers need sand replacement as soon as three to five years, but using liners approximately doubles that cycle to seven to 10 years. There's no permanent infrastructure on a golf course – greens, tees and irrigation systems need rebuilding, so we should expect that for bunkers, too. Superintendents who've been using them the longest report liners reduce, but don't eliminate, washing and soil contamination in sand bunkers. Overall, their maintenance regimens and budgets benefit.

There are two basic groups of bunker liners – fabrics and hard surfaces/soil binders.

Fabric liners include SandMat, SandDam and Sand Trapper. All are similar and have evolved and improved based on early usage; notably, early versions weren't durable. Those poor results led to the introduction of better grades of fabric. Recent usage shows the newest grades do much better for only a slight additional cost. The manufacturers

added better fastening systems and edge treatments that improve performance.

Installation costs about \$1.25 to \$1.50 per square foot. Some courses attempt to save money by placing liners only on slopes prone to washing. However, sand contamination comes from the top and bottom of the bunkers, so I recommend complete lining. On a current bunker project, we're using the highest grade liner on the steeper slopes and a mid-grade near the bottoms to help save money.

Disadvantages include the need to hand-rake bunkers to avoid pulling up the fabric. Some superintendents use mechanical rakes on the flatter portions (minus the cutting bar), but most don't take the chance. They figure faster travel time between bunkers in a utility vehicle and avoiding liner repair more than offsets the additional hand-raking labor.

Hard liners/soil binders evolved similarly. Early versions included products such as Bunker Guard, which became so popular it was difficult to get this product on site. Newer products include Klingstone and Sportcrete. The hard surface should be superior to fabric liners, but placing any hard material on native soils leaves them prone to cracking, much like nonreinforced concrete.

Proponents of these materials counter they're easier to repair than fabric liners. Advantages also include machine bunker rake use and preventing golfers from straining a wrist muscle if the club snags in a fold of material. Installation costs about \$2.50 to \$3.00 per square foot, which might be the biggest reason fabric liners are seemingly the more popular choice right now.

So, which is right for your course? I've used them all with good results, and I'm still monitoring the long-term effects. Visit with other superintendents in your area to see how their products are working in similar climates and soils and experiment with a few bunkers before making a decision. In any case, you'll find the long-term costs of using liners to be equal to or lower than the cost of not using them initially. And you'll have a better bunker. **GCI**

