

The Coarse Sand Layer — A Look at Installation

by **ROBERT A. BRAME**

Agronomist, Mid-Atlantic Region, USGA Green Section

LOOKING for an unpopular topic in the golf course construction business? Select “the intermediate coarse sand layer” in putting green construction and your search is over!

The Green Section first published its specifications for putting green construction in 1960. The current volume, *Specifications for a Method of Putting Green Construction*, is a detailed, step-by-step guide to putting green construction. Cited by most experts as the best method, there are those critics who might argue with the necessity of including all of the components of a “spec” green. Even the skeptics, though, would acknowledge that USGA Green Section Specs have set a high standard for putting green construction.

Shortcuts may help you beat the traffic on the way to work, but shortcuts in putting green construction will often cause long-term problems with maintenance and putting green quality. Poorly built greens also are more expensive to maintain, and many eventually have to be rebuilt. The higher cost of maintenance more than offsets any savings created by taking shortcuts during construction.

One of the most common shortcuts in building USGA spec putting greens eliminates the coarse sand layer. It is sometimes called the “choker layer,” a great misnomer since it does not choke anything. Much discussion through the years has evolved about the importance of this coarse sand layer in green construction. Until there is a fool-proof method of determining that the layer is not needed in a particular situation, however, it will remain a requisite of a USGA spec green. The focus of this article is not to argue the importance of the coarse sand layer, though, but rather to look at a few methods of installing this critically important component.

Installation of the coarse sand layer can be divided into two general categories; the more traditional methods (hand and/or small equipment), and new techniques (blowing it in and the conveyor belt).

Traditional Methods

For years, it has been argued that the 2” to 4” layer in a USGA green should be installed completely by hand. Many observers still feel this way. Typically, this process involves dumping piles of coarse sand in several convenient places around the green. Care is taken not to damage the green banks, bunkers, irrigation system, or other features. Sand is then moved from these piles onto the gravel base with wheelbarrows. It is dumped into small piles and hand raked into place. Sometimes 2” x 4” planks are used to create a parallel grid (much like concrete forms), ensuring a uniform depth as the sand is smoothed into place. Grade stakes with the appropriate markings for the gravel layer, coarse sand layer, and topmix provide reference points for the 2” x 4” planks. Though effective, this technique is slow and laborious.

Variations of this method have evolved over the years. Some builders use small utility trucksters instead of wheelbarrows to move the sand onto the gravel base. Those people who use this approach feel strongly that the gravel layer is not being disturbed. Others like the concept of using lightweight trucksters, but they take the precaution of putting down planks or plywood runways on which the vehicles can travel.

More and more contractors use heavier equipment with success. Dump trucks drop the coarse sand at the edge of the green, and a skilled operator uses a small dozer to push the material onto the gravel base. The operator stays on the sand, working the material from the edge in toward the middle. This technique allows the sand to be spread without tracking directly on the gravel.

Still others use rubber-tired articulating loaders or skid loaders. It is essential that the gravel base not be disturbed during the installation of the sand layer. The use of these larger pieces of equipment to install the sand layer is contingent on having the appropriate equipment and, even more important,

having an experienced and skilled operator.

A variation on the final step of hand raking and smoothing is the use of a small riding bunker rake with a plow attachment. Here again, use of a skilled operator is critical for success.

In surveying several contractors and golf course superintendents, the differences reported in the time needed to complete the installation of the coarse sand layer were significant. In most cases, the construction crew ranged from four to six people per green, including equipment operators. Given four to six people and a 7,000 sq. ft. green, the time needed to install the sand layer ranged from 90 minutes to one full day. Obviously, variations in installation techniques accounted for these differences.

A good rule of thumb, based on this information, would be that five people can install the coarse sand layer on a 7,000 sq. ft. green in half a day, or approximately 20 man-hours.

Another factor to keep in mind concerns the depth of the coarse sand layer. A depth of 3” to 4” is much easier and quicker to install than a 2” depth. The improved efficiency gained with a slightly deeper layer can be more than offset, however, by the increased cost of the material, depending upon its availability in the area. If cost considerations dictate a 2” depth, machinery of any kind is more difficult to use. Conversely, a 3” to 4” depth allows safer use of larger equipment.

New Techniques

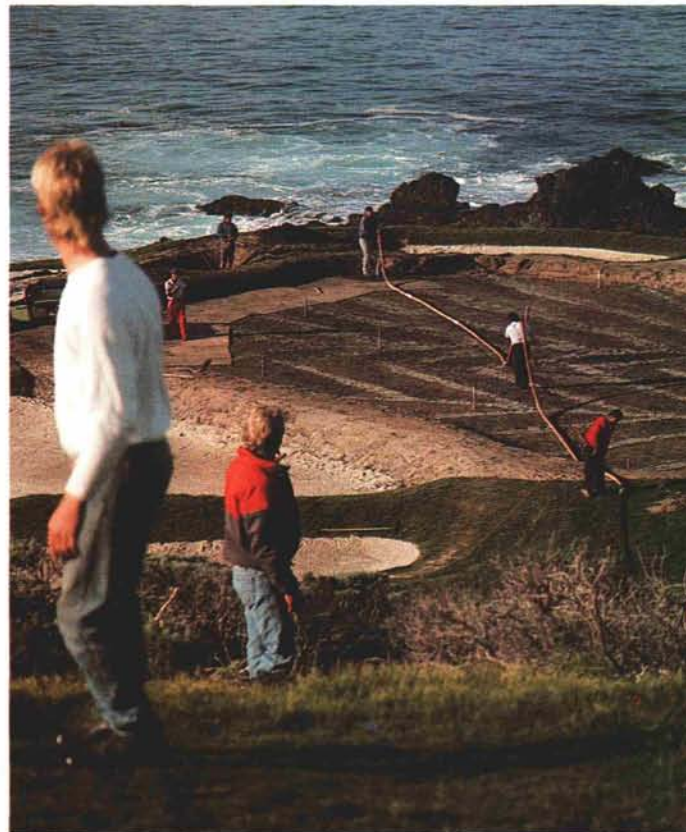
Two other methods of coarse sand layer installation involve newer techniques. The blowing-in method features sand blown through a large hose onto the gravel base. This process eliminates the need for large equipment or wheelbarrows to transport the sand onto the gravel. It is capable of putting down a consistent and uniform layer, but final raking often is needed. Those who have employed this method feel blowing-in takes as long or longer than the more



(Top) The construction crew hand rakes the coarse sand layer to a uniform 2" to 4" depth.

(Above) A small dozer is an alternative for working the coarse sand into place. The operator remains on the sand, working the material from the edge to the middle.

(Right) A 600 CFM compressor can be used to blow the sand through a large hose onto the gravel.



traditional techniques, but sometimes the crew size can be reduced.

The use of a long conveyor belt is another interesting new technique. Again, equipment is not needed to haul sand onto the gravel layer, and this minimizes the disturbance to the gravel and coarse sand layers. The conveyor can be set up at different locations around the green, using the long-arm reach to apply material to the gravel base. By working the arm back and forth, a uniform layer can be applied. A smaller crew may also be possible with this method. Time needed to

complete installation using this approach is usually comparable to that of the more traditional methods.

Blowing-in the sand layer or use of a conveyor-arm is probably more practical for larger projects (building 9 or 18 greens). When building just one or two greens, setup costs would quickly offset any savings in time.

The coarse sand layer is a key ingredient in *Specifications for a Method of Putting Green Construction*, as published by the USGA Green Section. If you want a quality putting green that has the best chance of

succeeding, *do not* cut corners. The least expensive green is one that is installed properly the first time, and when building a USGA spec green, the intermediate coarse sand layer is an essential component. Budget considerations and the availability of appropriate equipment and skilled operators will determine the best technique for installation. The coarse sand layer seems destined to be an unpopular step in green construction, but perhaps the installation techniques described here can help you sort out the best method for your particular circumstances.