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LEOPARD CREEK BUNKERTAC™ APPLICATION

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Introduction

Bunkertac™ is an environmentally friendly and technologically advanced emulsified stabilizer and erosion preventative used for bunker lining, sand flashing and contamination prevention on golf courses. The key to the exceptional performance of Bunkertac™ is its linear molecular structure consisting of millions of molecules that are linked and cross-linked together creating a stable bonding matrix.

When used for bunkers, Bunkertac™ will meet the requirements of a flexible bound surface with a high load bearing and shear strength capacity while allowing for drainage; prevent distortion and disfiguration of the bunker's shape; prevent contamination of the sand contained in the bunker and most importantly reduce initial application, repair and maintenance costs.

When used for sand flashing, Bunkertac™ will actually hold the sand in place all throughout the bunker most specifically on the face and along the edges thus improving the aesthetics and ensuring that the original intended design of the bunker has been met.

Bunkertac™ is completely environmentally friendly, safe for animals, wildlife and vegetation and dries clear and transparent leaving the environment in its natural state. As a result it will significantly decrease the environmental footprint of golf course developments, while at the same time allowing for superior treatment of several areas and significant cost reductions.

Benefits of using Bunkertac™ for the lining of bunkers include:

- Providing a flexible bound surface with high load bearing and shear strength capacity while still allowing for proper drainage and germination
- Prevention of erosion, contamination, distortion or disfigurement
- Reduced maintenance costs and ease of maintenance
- Ease of repair to any damaged areas
- Use of an environmentally friendly product
- Reduction or elimination of the washing of the sand
- Enhanced playability
- Improved shot value
- Reduction in the chances of "ball-lie"
- Improved aesthetics



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Background

Johann Rupert created Leopard Creek, and with Gary Player, designed a championship 18-hole golf course as its centerpiece, which opened in 1996 as an exclusive members only club. They wanted a course which friends could play and enjoy, yet which could also test the best of players. Small streams and lakes are found throughout the development, creating challenging play to the golfer. Remodeling of the Leopard Creek golf course took place in the year 2000 with a change of grass on the greens to Bent and the installation of sub-air systems. Golfing hazards take on a new dimension at Leopard Creek, for much of the water is home to hippos and the creature for which the adjacent river is named - the crocodile.

After nearly 15 years in operation and experiencing erosion and water run off problems with several of the bunkers on the course a renovation has become necessary. Having been advised of the environmentally friendly and technologically advanced product Bunkertac™ provided by On-Course Solutions; Golf Course Superintendent Derek Mugeridge chose to renovate three bunkers on the course as a trial using Bunkertac™. Two fairway bunkers on hole 18 and one greenside bunker on hole 8 were selected for the Bunkertac™ trial application.



Bunker on hole 8



Bunker on hole 18 #1



Bunker on hole 18 #2

Application

Preparation of the bunkers for the Bunkertac application included the removal of the existing sand within the bunkers, removal of sand trapper on hole 8, redefinition of the bunker edges, bowling and reshaping of the faces, removal of a sprinkler from the edge of the bunker on hole 8, removal of all loose soil and gravel and trimming and removal of grass roots within the newly defined edges.

For successful application of Bunkertac™ the proper preparation of the bunker to be treated is essential. Proper bowling and shaping of the bunker will lessen the amount of water run-off coming into the bunker. One of the benefits of using Bunkertac™ is that even with considerable amounts of water run-off contamination of the sand is eliminated or minimal even over the steepest of slopes.

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Sweeping and cleaning



Redefinition of the edge



Trimming of edge



Final sweeping



Sprinkler removal from edge



Water ingress



Hole 8 Bunker Prepared



Hole 18 #1 Bunker Prepared



Hole 18 #2 Bunker Prepared

The Bunkertac™ application began with placing sand over the drains for extra protection, pre-wetting of the bunker using a hosepipe to moisten and loosen the tension of the soil, a pre-coat of Bunkertac™ only followed by multiple coats of Bunkertac™ and sand.

Bunkertac™ was applied evenly over the bunker using several coats with a simple pump and spray system with a specially designed spray lance to control the flow rate and ensure the specified application rate was adhered to.





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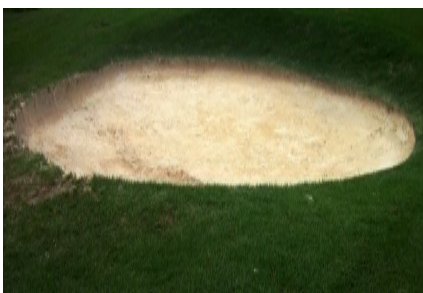
During the application process each coat of Bunkertac™ was given sufficient time to penetrate or soak in before applying another coat. In winter this may take up to 24 hours. This will ensure the desired penetration and avoid the formation of a skin or biscuit layer.



As each coat of Bunkertac™ was applied sand was dusted over the treated area and flashed into the edges using brooms to give the bunkers an aesthetically pleasing look and to assist with erosion and contamination prevention.

If an area were to become damaged, repair and maintenance of the damaged area is simple, efficient and quick (not labour intensive or time consuming), and can be done simply by pushing the bunker sand toward the base and applying an additional spray coat of Bunkertac™ and re-dusting the sand over the repaired area.

Using Bunkertac™ and the application methods developed by On-Course Solutions for stabilization of the edge and face of the bunker, sand flashing and contamination prevention will provide you with not only a more aesthetically pleasing look to your bunkers but improved playability as well as a reduced impact upon the environment.



Bunker 8 complete



Bunker 18 #1 complete



Bunker 18 #2 complete



Bunker 8 open for play



Bunker 18 #1 open for play



Bunker 18 #2 open for play

On-Course Solutions
Leopard Creek
Bunkertac™ Application
April 2010



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Observations and Conclusions from Bunkertac™ application

- Bunker base must be moist (OMC) prior to application of product.
- All equipment must be tested (off-site if necessary) prior to product application to ensure proper functioning.
- Spray nozzles should be set to provide an even spray coat over the bunker with minimal running or draining of the diluted product mix.
- Full and proper preparation of a bunker is essential to ensuring successful results.
- If drains are in place, the product must not be applied to the marked drainage areas.
- When preparing the mix dilution, the Bunkertac™ is added last, directly into the water and circulated through the return valve of the pump.
- For best application, a firm round hose may be more effective than a flat hose in order to prevent kinking and allow for a smooth continuous flow rate.
- During the application each coat must be allowed to penetrate or “soak in” before applying another coat. In winter this can take up to 24 hours.
- Compaction of the bunker should be done 2 to 3 days prior to application if possible.
- All equipment used must be rinsed off thoroughly as soon as possible after application before the product has a chance to dry or cure.
- After application bunkers must remain free of watering, rain and any human traffic for a minimum of 24 hours. (48 hours during winter months)
- Spraying the product around the perimeter and high sides of the bunkers will assist in the prevention of contamination from fugitive material transported from fairways and landscaped areas nearby.
- Bunkertac™ is easier to install than other products and requires much less maintenance.
- Breaking up of the sand over the drains before each coat of Bunkertac™ is applied and before the sand is placed will help ensure there are no blockages within the drains.



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For more detailed information regarding how On-Course Solutions may assist you on your golf course please contact us today.

We offer training on the process so that your on site crews can perform applications and maintenance.

Contact us directly for further information:

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