



PROJECT SUMMARY

KN Golf Links Cam Ranh

AGRONOMIST

Charles Graham,
On Course Project and
Agronomic Consulting

SENIOR OPERATIONS DIRECTOR

Dan Grassi,
Greg Norman Golf Course Design

PRODUCTS USED

Profile Porous Ceramic
(PPC) Greens Grade

DISTRIBUTOR

Jebsen and Jessen

BACKGROUND

Located by the ocean in Cam Ranh Bay in Vietnam, the Greg Norman signature golf course KN Cam Ranh Golf Links opened in March 2018. The 18-hole course is part of the first phase of a large upscale development set on a stunning 800-hectare site with five kilometers of ocean frontage.

Built atop rolling dunes with some 50 meters of elevation change from highest to lowest point, the KN Cam Ranh Golf Links faced a number of significant challenges in its development—from leveraging on-site sand, to crafting greens that could flourish through the rainy season. Seeking support in course development, Charles Graham, Agronomist, On Course Project and Agronomic Consulting looked to Profile Products for practical solutions.

Knowing his team would be managing the grow-in and maintenance of the course moving forward, Graham relied on Profile to deliver solutions to not only support course development but provide long-term maintenance benefits.

CHALLENGES

The natural beauty of the Vietnam landscape provided idyllic surroundings for a championship golf course, but those spectacular ocean views and rolling dunes came with their own unique set of challenges. The natural conditions in Vietnam, notably the heavy rain season, made water management a major concern for Graham and his team.

Perhaps more concerning, and an issue that came with significant financial implications, the team needed to find a way to use on-site materials for the construction of greens and bunkers, while taking into consideration water



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— CHARLES GRAHAM, ON COURSE PROJECT AND
AGRONOMIC CONSULTING

management requirements. Tests conducted by Graham revealed that the sand available would not enable the team to grow the quality of greens necessary for a championship course—but using this sand was critical to the project.

"KN Golf Links Cam Ranh was recognized at the Asian Golf Awards as the Best New Course in Asia"



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AND AGRONOMIC CONSULTING



THE SOLUTION

Utilizing the sand found on-site from the excavation of the irrigation lake would not only maintain the natural environment, but financially speaking would eliminate the cost of buying a specified sand and hauling it to the property, which would take a toll on the project budget. Unfortunately, as proven by Graham's testing, the sand did not have the necessary physical performance characteristics to succeed in the rainy and wet climate of Vietnam.

Having worked with Profile Products for over twenty years, Graham immediately recognized the need for Profile Porous Ceramic (PPC) Greens Grade, an inorganic amendment, to ensure the on-site sand would enable him to produce a championship level playing surface.

"We could have used the sand as it naturally occurred but we simply wouldn't have had

the same results," noted Graham. "If you used the sand as-is, you develop problems very early on. It's essential to adjust the sand to have the right drainage rate, especially during the wet season, otherwise the greens can't manage the rainfall."

Graham noted that the team was "able to take the sand from the course, add Profile to increase the drainage rates by 25% as well as balance the air porosity and water holding capacity to enable the sand to perform its best."

Blended with sand in a greens mix, the Profile Porous Ceramic particles improve water- and nutrient-holding capabilities, increase oxygen levels at the root zone, and facilitate drainage when soils are saturated.

RESULTS

As a result of the mix, fertilizers have more efficacy, and water management at Cam Ranh is much easier.

The solution provided by Profile not only delivered a substantial short-term financial benefit to Cam Ranh—Graham estimates that the project would have incurred tremendous costs to haul in another sand—the quality of the greens are expected to deliver improved long-term maintenance benefits which offer additional positive financial implications.

The golf course will be a critical feature of the future upscale development at Cam Ranh, and the quality of the final product was extremely important. After opening in March 2018, KN Golf Links at Cam Ranh has attracted international attention thanks to its spectacular greens and stunning landscape.



"If we had to haul in another sand, it would have probably cost at least \$125,000 but instead we were able to buy Profile Greens Grade which almost paid for itself. Due to my long history in using Profile, I can say that you do get tremendous long-term maintenance benefits."

— CHARLES GRAHAM, ON COURSE PROJECT AND AGRONOMIC CONSULTING