MACCAFERRI

CASE HISTORY

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BALESIN ISLAND CLUB RUNWAY

BALESIN ISLAND, POLILLO, QUEZON, REGION IV-A, PHILIPPINES

Sub-grade Improvement

Problem

Major development works were undertaken at Balesin Island for the development of the Balesin Island Club, a 454 hectares island resort in Quezon, Philippines. One of the works prioritized was the construction of the 40 meters wide x 1.5 kilometers long runway for specific range of aircraft.

Based on the conducted soil investigation, it appeared that the existing subgrade of the runway has low strength to accomodate aircraft loadings. Initial recommendation of the geotechnical engineer was for the foundation of the concrete runway to be laid on layers of base and a sub-base courses, both of which was planned to be imported into the island. However, due to the isolated location of the island as well as the challenge of shipping construction materials, the customer (Alphaland Corporation) decided to find an alternative solution that would be more practical and economical but at the same time does not sacrifice the integrity of the designed runway.

Solution

Considering the challenges, Maccaferri engineers coordinated with the Project Consultant (TCGI Engineers) in coming up with an alternative solution. The main objective of the recommendation was to maximize use of in situ soils for the foundation of runway. In this, MacCell 3D cellular confinement system was recommended. A foundation layer that is strong enough to carry the imposed aircraft loads by principle of soil confinement and load distribution was established using MacCell. By confinement, classified and approved in situ soils was filled into the MacCell panels, thereby reducing the volume of needed aggregates to the island.

Further, it has been recommended that the in situ soils must be compacted to a minimum density of 98% of MDD by Standard Proctor to satisfy design requirements. To address possible mixing of soft subgrade materials and the compacted in situ soils inside the MacCell, a layer of MacTex nonwoven geotextile was laid on top of the existing subgrade.

Client: Alphaland Corporation

Designer / Consultant: TCGI Engineers

Contractor: Alphaland Corporation

Products used (Qty.)

- MacCell N/A
- MacTex Non-woven Geotextile N/A

Date of construction: 02/2011 - 04/2011

February 2011 - During Construction - Laying of Non-woven Geotextile

February 2011 - During Construction - Laying and Expanding of MacCell

February 2011 - During Construction - Filling the MacCells

May 2011 - Project Completed

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