MACCAFERRI

CASE HISTORY

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LUDO-LUYM OIL STORAGE TANKS

CEBU, REGION VII, PHILIPPINES

Basal Reinforcement

Problem

Ludo-Luym would like to construct a vegetable manufacturing facility in Cebu City but has an issue with soft soil that accounts to a low or insufficient bearing capacity for shallow foundations. The soil will be induced with two new vegetable tanks with capacities of 5.4 million liters each. The initial recommendation was to improve the ground using driven piles, but driven piles are considered an expensive solution for ground improvement.

The induced load of the tank is 140 kPa. Since the area is underlain with a very soft soft clayey/silty sand, its bearing capacity is insufficient to carry the uniform load. Hence, ground improvement is necessary. The owners sought for a more cost-effective solution other than using driven piles, yet addresses the issue of insufficient bearing capacity.

Solution

Maccaferri recommended the use of geogrids to address the insufficient bearing capacity of the soil. A backfill with a height of two meters from the bottom of the footing sandwiched the layers of the geogrids. The very first layer (bottommost layer) of the two-meter backfill is a non woven geotextile for separation of the natural soil to the backfill material. And after 0.5 m of backfill, the first layer of cross-laid 100 kN/m geogrids was installed. And the last two layers of the same specifications of geogrids was installed at 0.5 m spacing as well, complying to a total of two-meter backfill. The geogrids were able to carry all the loads induced by the vegetable oil tank.

Client: Ludo-Luym

Designer / Consultant: EC Calderon

Contractor: EC Calderon

Products used (Qty.)

- MacGrid WG	MacGrid WG10 - 16120 sqm
- MacTex Non-woven Geotextile	MacTex MXL 60 - 2200 sqm

Date of construction: 03/2021 - 04/2021

During Construction

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