MACCAFERRI

CASE HISTORY

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EPIC TANK FARM FACILITY AND SITE DEVELOPMENT

BATANGAS, REGION IV-A, PHILIPPINES

Basal Reinforcement

Problem

Sta. Clara International will be constructing a warehouse above a soil which requires at least a 60 kPa of soil allowable bearing capacity. But the issue is that the soil is underlain with at least six meters of very soft saturated soil having an SPT-N value range of less than 10, which explains the soft consistency of the soil. In addition, the area is near a coastal area which explains the saturated soil. Also, the soil is full of discarded material when it was excavated. The wastes were exposed upon excavation. Moreover, upon excavation at a depth of two meters, the water table was exposed. The issue of soft soil is a low bearing capacity and an excessive settlement.

Soft soils with excessive settlement can be addressed using different solutions like the use of bored piles. Bored piles are drilled until the tip of the pile reached dense soil. Considering the soil investigation report, the dense soil is at a depth of seven meters below the natural ground. For a small area, using piles having a minimum length of seven meters is quite expensive. Hence, Sta. Clara sought for a recommendation that is more cost-effective but will provide the same effect as bored piles.

Solution

Maccaferri recommended to use geogrids to address the issue of soft soil and excessive settlement. The two meters excavated area will be filled with a good backfill material. A layer of non woven geotextile was installed first at the bottom of the excavated area. A 1.4 m backfill was put after laying the non woven geotextile. The first layer of the 80 kN/m geogrid was laid above the 1.4 m backfill. The second layer of geogrid was installed after backfilling another 0.3 m. And the finished grade will on the last 0.3 m of backfill after the second layer of geogrid.

A confirmatory test (plate load test) was done upon finishing the installation of the geogrids. The only required allowable bearing capacity is 60 kPa, yet the results of the plate load test provided a 472 kPa of allowable bearing capacity with a settlement of 3.48 mm only. The geogrid was able to provide a more cost effective solution that address both geotechnical engineering problems (low bearing capacity, excessive settlement).

Client: Atlantic, Gulf & Pacific Company of Manila Inc.
Designer / Consultant: Sta. Clara International
Contractor: Sta. Clara International
Products used (Qty.)

- MacGrid WG	MacGrid WG 8 - 2600 sqm
- MacTex Non-woven Geotextile	MacTex MXL 70 - 1200 sqm

Date of construction: 01/2022 - 03/2022

During Construction

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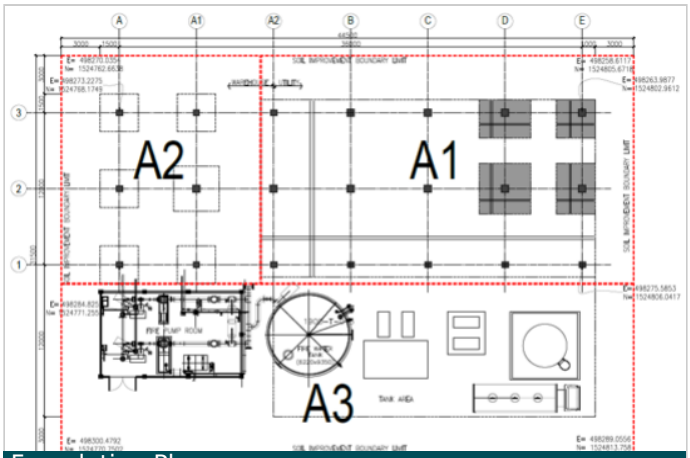

Foundation Plan

During Construction

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