

Site Visit Report - AGS(HK) Technical Site Visit - Tung Chung East Reclamation

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Introduction

AGS(HK) organized a technical site visit to the reclamation site for Contract No. NL/2017/03 - Tung Chung New Town Extension (TCNTE) project on 10 June 2023. This CEDD project aims to enhance the further development of Tung Chung New Town. The site area is a newly reclaimed land of about 130ha located to the north of Tung Chung and its associated long seawall and eco-shoreline about 4.9km long has been completed in Jan 2023.

Deep Cement Mixing (DCM) Method

As briefed by the site team, soft marine deposit layer up to 20m thick is overlain a competent stratum of alluvium. The presence of a low undrained shear strength and high compressibility of the clayey material arises concerns in ground stability and settlement control which will affect the permanent structures/utilities and ground improvement is considered necessary.

With consideration of cost, construction time, and environmental impact, DCM method was adopted in this project, which stabilizes the seabed by mixing cement slurry with soil to form solid columns. These DCM clusters are designed to be overlapping under the seawalls to enhance the shear strength of the founding material. Compared to traditional approaches, DCM is a non-dredged method which is more environmental-friendly by avoiding excessive disposal and transportation. It also benefits the construction programme without the needs of removal and consolidation process of the sediment.

The site team illustrated the construction sequence of the DCM method with a small-scale simulation model, and also explained its design principle, construction difficulties, and advantages. Ground settlement monitoring by was provided to assess the residual ground settlement and for performance review during the construction period.

Eco-shoreline Design

The site team briefed us how the eco-shoreline design to create ecological environments for marine life along the seawall. The eco-shoreline design consists of three types: mangroves, rocky and vertical. Each type has different features and benefits for different species and site conditions. For example, rocky eco-shoreline provides refuge for intertidal organisms by means of the micro tidal pool with sufficient water retention capacity. Also, the choice of eco-shoreline type is based on various technical considerations such as the availability of sunlight and potential impact from the sea waves, as well as obstruction due to adjacent on-sea transportation. It is noteworthy that the eco-shoreline is designed as maintenance free in the permanent stage of the eco-environments.

During the site walk, we visited the area with the eco-shoreline and observed its typical arrangement such as the mudflats, mangroves and oyster baskets. Perimeter silt curtain is also provided surrounding the works area as an environmental precautionary measure. As informed by site team, regular visual inspection by vessel and collection of water samples are required to assess impact on the water condition due to construction.

Lastly, I would like to thank AGS(HK) for arranging this valuable site visit and providing a knowledgeable learning experience.



Presented by the site team to introduce different types of eco-shoreline design in the project and their advantages.



The site team briefed us about the construction sequence and principle of DCM method by the small-scale simulation model.



Small-scale model for each type of eco-shoreline design used in the project.



Viewing of the eco-shoreline with mudflat, mangrove, and oyster baskets. Silt curtain was also observed surrounding the site as an environmental protection measure.