

Project Location:

Hong Kong (SAR)

Main Contractor:

China Harbour Engineering Co. Ltd.

Client:

Highways Department of Hong Kong

Project period

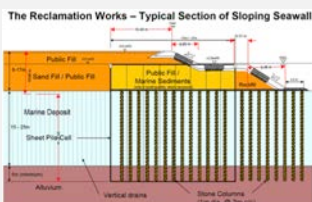
Sept. 2012 – Apr. 2014

Method Applied:

Over 1,000,000 meter of offshore Stone Columns, up to 38 m deep, diameter 1.00 m, installed in an offset rectangular grid of 3.00 m.



View of HKBCF island



Stone Columns under seawall

Betterground GmbH

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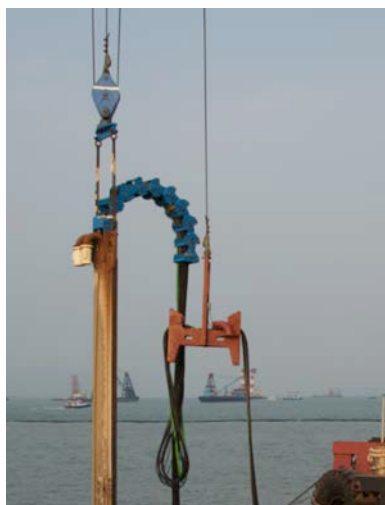
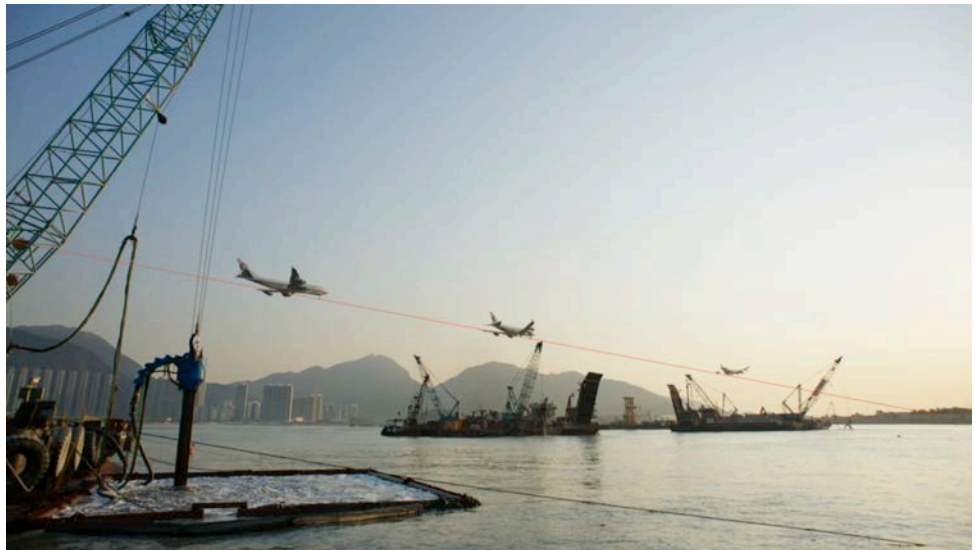
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Technical Requirements:

The Hong Kong Boundary Crossing Facility is an approx. 1.5 km x 1.5 km artificial island located just east of the Chek Lap Kok Airport. It is used for custom clearance of passengers on the Hong Kong – Zuhai – Macao roadlink.

The island is founded on 4 m to 38 m thick soft marine clay deposits that had to remain in place due to environmental protection considerations.

This posed a challenge both on schedule and constructability, as parts of the seawalls founded on Stone Columns were so close to the Airport runways, that in some locations extreme Airport Height Restrictions (AHR) had to be obeyed where the stone column rig had to go deeper into the clay than its own permissible length based on AHR limits.



Betterground Extreme AHR Rig:

Betterground build from scratch and deployed within a few months a total of 16 offshore stone column rigs, of which 8 were of the extreme AHR rig type shown on the left. The idea was to have the gravel fed via a 6-inch rubber hose that can flex 180 degrees and partially submerge into the top of the marine clay sediments, thus gaining length while keeping the length when suspended in the air at a minimum.

Quality Control Monitoring and Testing:

For offshore stone columns more than for onshore columns, a perfect data logging and installation parameter control is essential. Betterground's patented operator guidance system that not only logs the data, but tells the operator how to do his work, was making it possible to install high quality columns from day one with operators that had never before installed Stone Columns.