



Key achievements

- Provided alternative solution that saved time and generated substantial savings for client

The project

Cityview Place Holdings Pte Ltd built a luxurious 6-storey condominium at Sentosa Cove, Singapore. The condominium comprised of two buildings, one built on piles and the other on raft foundation. Keller performed Deep Soil Mixing to support the raft foundation.

The challenge

At the location where raft foundation was used, the general soil profile was 3m of loose sandfill followed by stiff clay of SPT-N values more than 50. However, at one location, soft clay of up to 8m (SPT-N values less than 5) was present. The concern was that the soft clay will pose issues of settlement. The original solution was piling. However, with the soil profile, there was an opportunity to have substantial savings with an alternative foundation solution. Keller proposed Deep Soil Mixing (DSM) on areas where soft clay was present. The ground improvement was designed such that the settlement from the building (loading up to 180 kPa) was within tolerance.

The solution

The modified twin-shafts LRB155 capable of mixing two columns at the same time was mobilized to site. Deep Soil Mixing was performed to firm layer. The average column lengths were between 5 m to 11 m. Coring samples showed that the DSM columns were able to achieve Unconfined Compressive Strength of average 3 MPa and modulus of 390 MPa.

Application

Ground Improvement

Technique

Deep Soil Mixing

Market

Residential

Client

Cityview Place Holdings Pte Ltd

Main contractor

Dragages Singapore Pte Ltd

Contract Value

Keller business unit (s)

Keller ASEAN