

Kapok Building & 16 Nexus Way

Camana Bay, Grand Cayman, Cayman Islands

Camana Bay is a vibrant waterfront destination town offering a range of attractions and living accommodations on Grand Cayman, the largest Cayman Island. As the latest additions to the island community, the Kapok building and 16 Nexus Way were founded on ground improvement completed by Keller.



The project

Each 10-story, mixed-use buildings had a footprint of 15,000 SF. Ground conditions generally consisted of 20 ft of loose-fill soils, grading from sand and marl/limerock fill, swamp deposits/peat, weathered limestone (Ironstone formation), and over competent limestone/dolomite bedrock (Pedro Castle/Cayman formation). Groundwater was encountered 4 ft below working grade.

The challenge

- Limit structural settlement to the required 5,000 psf bearing capacity and limit settlements to one inch or less
- Meet the accelerated schedule driven by the owner's pre-determined opening date for the building

The solution

The local geotechnical consultant recommended deep foundations or ground improvement by vibro compaction after removing the peat layer and replacement with clean granular fill and shot rock. Keller had worked with the geotechnical consultant on previous local ground improvement projects. Drawing on this experience, Keller developed and installed a design-build vibro compaction solution for the first building that was technically viable, cost-effective, and could meet the fast-tracked deadline.

Two 30-ft by 30-ft test sections were conducted at 7-ft and 9-ft vibro probe spacings to determine the optimum spacing and treatment depth to achieve the project objectives, resulting in a 7-ft square grid selected for production work. The vibro probe was advanced to refusal at an average depth of 22 ft, with granular fill placed at each location. Standard Penetration Testing (SPT) was conducted pre- and post-treatment to verify adequate soil improvement.

Keller's solution was completed by the deadline, meeting or exceeding the project objectives. Vibro compaction for the second tower began within two weeks, avoiding additional mobilization costs from Florida.

Project facts

Owner(s)

Dart Real Estate, Grand Cayman

Keller business unit(s)

Keller

Main contractor(s)

Dart/DECCO, Grand Cayman

Solutions

Deep foundations
Ground improvement

Markets

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Commercial

Techniques

Vibro compaction

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