

Cofra Dynamic Compaction

Project report

Sand compaction "The Wave", Oman



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The method

The CDC (Cofra Dynamic Compaction) method, is a fast and reliable technique for the compaction of sand and gravel. The underlying strata are densified from the existing surface by dropping a 9 to 16 ton poulder from a specified height at intervals ranging from 40 to 80 blows per minute. Depending on the soil type, requirements and effort, a densification can be measured up to 8 meters below the surface.

The project

The CDC compaction was executed on the project "the Wave" near the airport Seeb in the Sultanate of Oman. Our client was Boskalis Westminster Oman LLC who reclaimed the land for future housing development. After the reclamation using sands with a high carbonate content, an area of

24,000 m² did not meet the contractual compaction requirements. Cofra was invited to use the CDC method to achieve the required compaction at depth. The execution of the work was in November 2007

Equipment

The equipment used in the project consisted of a CAT385C base unit with a 9 ton CDC hammer of the first generation. A foot with a diameter of 2 meters has been used for the compaction.

Compaction lay-out

Compaction was executed in two phases. The first phase consisted of compaction in a square grid with center to center distances of 4 meters. 40 blows were applied on each grid point. The second phase consisted of compaction using a square

grid of 2 meters, filling in the points in-between those from the previous phase. 20 blows were applied at each point.

Review

Due to the high shell content, the sand was difficult to compact. The contractual specification of a minimal cone resistance of 3.3 MPa was reached using the CDC method.

The CPT profile before and after compaction is given in Figure 1

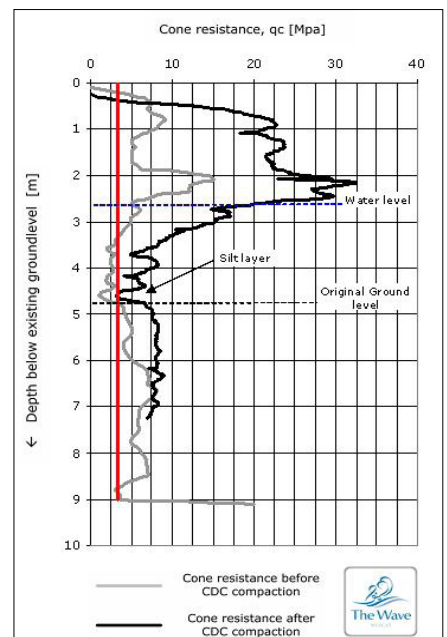


Figure 1 CPT before and after CDC

