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PEARL JUMEIRA PROJECT
a case study of land reclamation in Dubai, UAE

سلطة دبي للمجمعات الإبداعية
DUBAI CREATIVE CLUSTERS AUTHORITY

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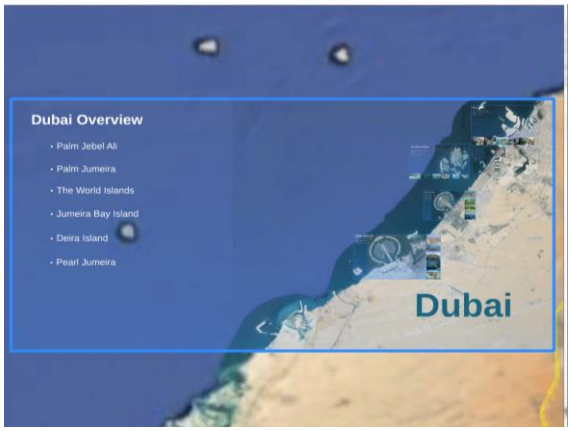
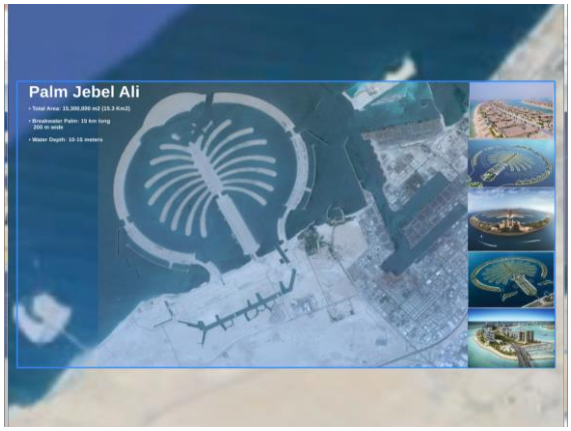
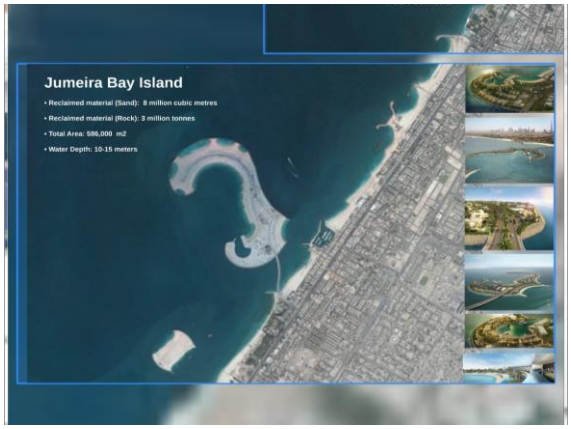
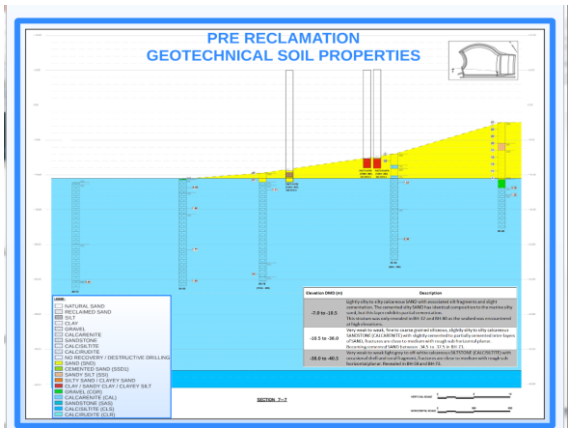


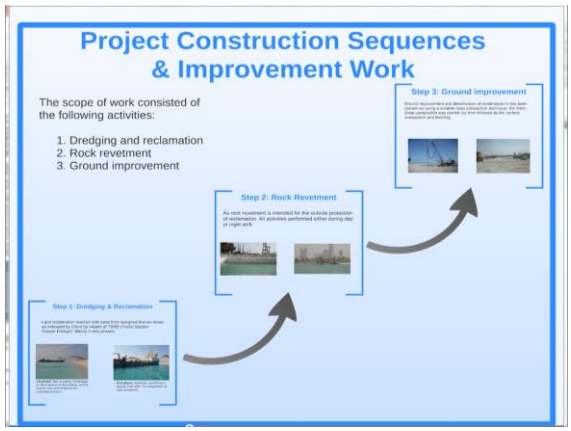


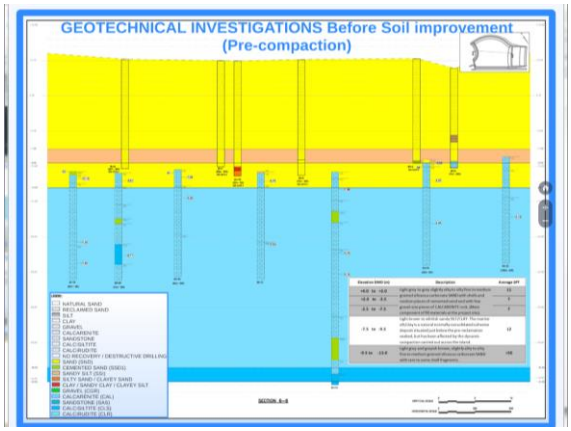

Jumeira Bay Island
• Reclaimed material (Sand): 8 million cubic metres
• Reclaimed material (Rock): 3 million tonnes
• Total Area: 586,000 m2
• Water Depth: 10-15 meters

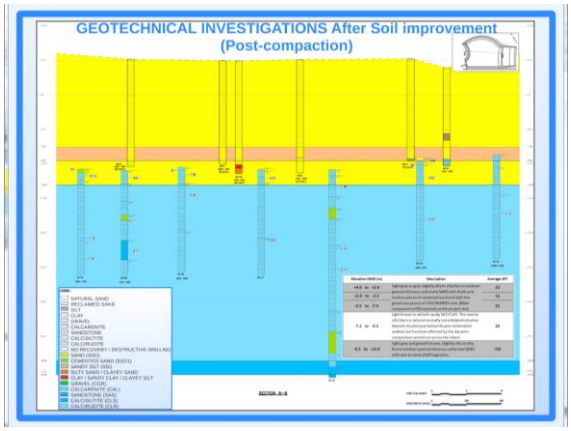

Deira Island
• Total Area: 15,300,000 m2 (15.3 km2)
• Shore coastline and breakwaters: 23.5 km
• Water Depth: 10-15 meters
Pearl Jumeira


Pearl Jumeira
• Case Study
• Reclaimed material (Sand): 9 million cubic meters (approximately)
• Total Area: 771,142 m2
• Water Depth: 10-15 meters
Pearl Jumeira


PRE RECLAMATION
GEOTECHNICAL SOIL PROPERTIES


Project Construction Sequences
& Improvement Work
The scope of work consisted of the following activities:
1. Dredging and reclamation
2. Rock revetment
3. Ground improvement
Step 3: Ground improvement
Step 2: Rock Revetment
Step 1: Dredging & Reclamation


GEOTECHNICAL INVESTIGATIONS Before Soil improvement
(Pre-compaction)



Elevation DMD (m)	Description	Average SPT	Average SPT
+4.0 to +2.0	Light grey to grey slightly silty to silty fine to medium grained siliceous carbonate SAND with shells and random pieces of cemented sand and with few gravel-size pieces of CALCARENITE rock. (Main component of fill materials at the project site).	11	22
+2.0 to -2.5		7	15
-2.5 to -7.5		7	21
-7.5 to -9.5	Light brown to whitish sandy SILT/CLAY. The marine silt/clay is a natural normally consolidated cohesive deposit situated just below the pre-reclamation seabed, but has been affected by the dynamic compaction carried out across the island.	12	28
-9.5 to -13.0	Light grey and greyish brown, slightly silty to silty fine to medium grained siliceous carbonate SAND with rare to some shell fragments.	>50	>50

SUMMARY AND CONCLUSIONS

1. The Pearl Jumeira is constructed from Dubai sourced reclaimed sand and locally sourced rockworks. The depth of the sea was between 10 m to 15 m.

2. Soil improvement was carried out using Vibro Deep compaction followed by surface compaction.

3. The ground improvement design was carried out to improve the stiffness of the fill material, reduce the long and short term settlements, and minimize the risk of liquefaction of the recently hydraulically placed sandy materials.

4. Ground improvement works were carried out by an experienced contractor, testing was carried out before and after to control and measure the quality of the compaction works and the performance of the ground improvements.

5. Vibro-compaction method was used for the deep soil improvement to achieve the required CPT performance line as per the approved criteria for this project and vibratory roller compaction was performed for the shallow improvement to achieve the (95%MDD). The performances were measured using CPT, in-situ density and monitoring settlement of the fill.

6. All post compaction tests were matching with design assumptions and requirements.

7. There is no risk of liquefaction and the safety factor was more than 1.25 for seismic zone of 2A and PGA 0.15.