PALM ISLANDS

• Artificial islands in Dubai, United Arab Emirates.

• Shape of palm trees.

• Composed of three islands:
  ➢ Palm Jumeirah
  ➢ Palm Jebel Ali
  ➢ Palm Deira

• Large number of residential, leisure and entertainment centers.
Project Review

Location: Dubai, United Arab Emirates
Start date: August 2001 - April 2008
Finish date: November 2008
Number of Villages: 1400
Number of Hotels: 32
Firm: Nakheel
Cost of filling: 2 Billion Dollars
Cost of Project: 11 Billion Dollars
Composed Of Three Islands
The Palm Deira is the largest of the three
The Palm Jebel Ali is the middle-sized island of the three
The Palm Jumeirah is the smallest of the three
HISTORY

• Dubai is one of the richest places in the world.
• Major source of income is oil industry.
• By 2016 it is believed that oil will finish in Dubai, thrashing its economy to ground.
• The crown prince SHIEKHMUHAMMAD devised a lot of plan to save his country.
• His vision was to turn Dubai into a #1 luxury and holiday resort.
WHY IT MADE IN DUBAI?

• Dubai have sunny days throughout the year.
• 5million tourists visit Dubai annually ,but the SHEIKH wanted to more than 15 million
• Problem- Coastline of Dubai is 72kms which is not enough for 15million tourist. So he improve the cost line of Dubai.
• The SHIEKH MUHAMMAD planned to build a artifical palm tree shaped island which will increase the coastline by 56kms.
COMPANY PROFILE

• The palm islands are constructed from sand dredged from the bottom of the Persian Gulf by the JAN DE NUL company.

• INFORMATION ABOUT COMPANY
  – TYPE-Private
  – FOUNDED- 1868
  – HEADQUARTERS - Netherland
  – AREA SERVED- Worldwide
- Coastal Dubai
- 5.5 km into the Arabian gulf
- Area 5.72 sq. km.
- Gulf is 30mtrs. deep, 160km. wide
The plan

• City at sea
• Luxury villas
• Shopping malls
• Restaurants
• Island to be made of natural materials - rock and sand
  – Sand: 94 million cu. m.
  – Rock: 5.5 million cu. m.
Source of sand and rocks

• 16 quarries across United Arab Emirates
• 6 nautical miles out in the gulf sea bed
  – It’s coarse
  – Dense
  – Resistant to wave impact
To fill of sand and stone
Machinery

- Barges- a long flat-bottomed boat; float boat
- Tugboats- used for towing larger boats and ships
- Dredges- an apparatus to scoop mud
- Vibro-compactors
- Heavy land based machines- cranes, bulldozers, etc
VIBRA COMPACTOR
BARGES
APTURES
TUGBOAT
DREDGES
Construction Process

• Phase 1: Construction of BreakWater

• Phase 2: Construction of Palm Island

• Phase 3: Infrastructural Development on main Island
Construction of **BreakWater**

- **Build up the sea floor**
  - Collect a thin layer of sand from a sea bed
  - Dump it on the site of the construction
  - This layer of sand was to 7.4 meters thick

- **Layer of Rubble**
  - Huge rocks of irregular shape and size
  - Provides rigidity to the wall
  - It is 7 meters in height

- **Outer Armor**
  - The rocks are interlocked among themselves.
Use of Technology in breakwater.

- Powerful **GPS** support
- Provides precision
- Handy in irregular land reclamation
Construction of Palm Island

- The main island, the palm land is constructed
- It is build completely based on the sand
- Different techniques is used for laying of the sand
Infrastructural Development

• Entire city is placed in a span of 2 years

• It has a capacity to withstand a population of 220,000.

• Palm island will feature themed hotels, Villas, Apartment buildings, beaches, restaurants.
CHALLENGES . . . ! ! !

- Raw Materials
  - Sand
  - Stone

- Water Stagnation
• Ecosystem

• Earthquake prone zone
Corrective Action for challenges.

- Sand was dredged from the sea bed itself.
- Stone was brought from quarries throughout the United Arab Emirates.
• 115 meters spaces opening on each side to eliminate stagnation.

• Ecosystem was inversely affected as expected.
• Using Vibro-compactors in construction where affected earthquake.
Reasons For Ground Improvement

1. Provide foundation bearing capacity.

2. Settlement reduction in case of an earthquake by mitigation of liquefaction.

3. Increase of lateral stiffness around pile foundations.
Quality Control

• Thorough field geotechnical investigation, lab testing and surveying works.
• Differential Global Positioning Systems (DGPS).
• Sand covered by an erosion-preventing water-permeable geo-textile.
• Maintaining of coastline.
Future Plans

- Al Furjan
- Restoration of Dubai’s Jebel Ali Village
- New community shopping centre.
Thank You