Petronas Towers, Malaysia

Ben Berwick
Charles Cunliffe
Chris Delia
Peter Gorgas
Petronas Towers

- Location: Kuala Lumpur, Malaysia
- Use: Office
- Antenna or spire: 451.9 m (1,482.6 ft)
- Roof: 378.6 m (1,242.1 ft)
- Top floor: 375.0 m (1,230.3 ft)
- Floor count: 88
- Floor area: 395,000 m² (4,252,000 sq ft)
- Elevators: 78 (1 & 2)
- Cost: $ 1.6 billion
- Features a Skybridge
Site Exploration

- More Than 200 Borings
  - 8m on center
- 260 In–Situ Pressure meter Tests
- 2,3500-ton Pile Load Tests
Site Details

• **Original Proposed Location:**
  – Porous Subterranean Limestone Cliff
  • Extended from surface to a depth of 395ft.
  • Susceptible to sinkholes
  • Moved 200ft. to avoid Limestone Cliff
Site Details

• New Location
  – Limestone Rock Formations
    • Significant Amount of Cavities
  – “Kenny Hill” Formation
    • Stiff Sandy Layer
Ground Improvement

- **Fluid Grouting of Limestone Bedrock**
  - 2300 m$^3$ of fluid grout in Tower 1, and 1100 m$^3$ in Tower 2
- **Compaction Grouting of Slump Zone**
  - 900 m$^3$ of compaction grout
Foundations

- **208 Rectangular Barrette Foundations**
  - 1.2 m x 2.8 m plan dimensions
  - 60m to 130m deep
  - Post Grouted
Summary

• Structure Overview
• Site Exploration
  – 200 borings
  – Pile load tests
  – Pressure meter test
• Site Details
  – Limestone
  – Kenny Hill

• Ground Improvement
  – Fluid grouting
  – Compaction grouting
• Foundations
  – 200 rect. barrette piles
References


QUESTIONS?