

Pioneering Engineering Solutions: Foundation and Earth Retaining Systems for a Landmark Development in West Amman Umm Al-Sumaq

By the Geotechnical and Structural Design Team at DRAB.

Amman, Jordan – June 23, 2025 – DRAB Engineering Consultants is proud to announce the completion of the Conceptual Foundation and Earth Retaining (Shoring) Design for a landmark development in Amman. This milestone highlights DRAB's commitment to delivering cutting-edge geotechnical solutions that prioritize safety, sustainability, and engineering excellence.

ENGINEERING STUDIES AND ANALYSIS

Situated on steeply sloping terrain underlain by complex soil and limestone formations, the project required rigorous geotechnical evaluation. DRAB conducted a detailed ground investigation that included borehole drilling to depths of up to 52 meters, comprehensive soil classification, and in-situ testing.

Key findings included:

- Heterogeneous fill materials with inconsistent and unsuitable bearing capacity.
- Micritic limestone strata, providing reliable rock mass conditions for pile socketing.
- Faulted and jointed geology, requiring special consideration for stability and pile performance.

Drawing on international best practices and references such as AASHTO LRFD (2012), BS 8004, and the Jordanian National Code, DRAB established robust geotechnical parameters and design assumptions. Analyses confirmed that deep friction piles socketed into micritic limestone would deliver the most reliable and safe foundation solution.

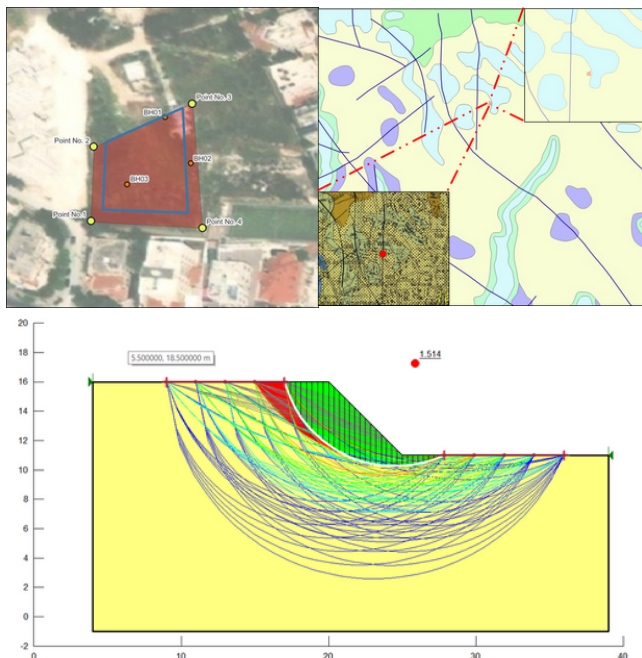


Figure 1 Stability Analysis

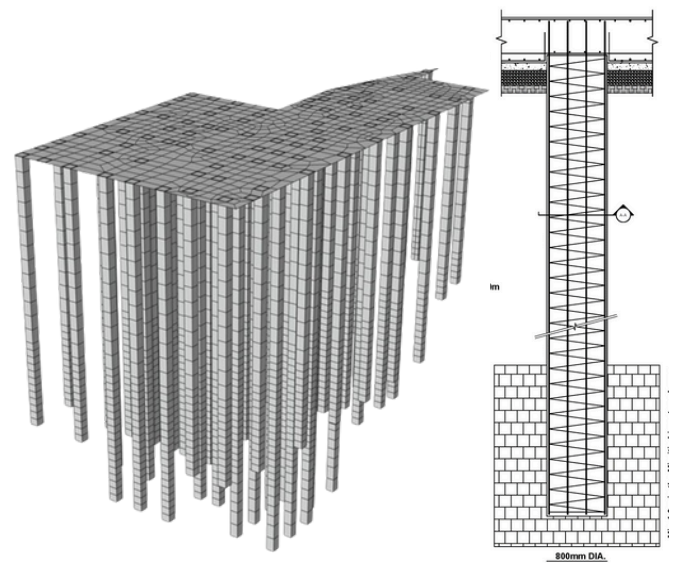


Figure 2 Deep Foundations

SCHEMATIC DESIGN

The conceptual design translated these engineering insights into a practical, resilient system that integrates foundations and earth retaining structures within the overall project scheme.

Highlights include:

- Foundation system: 800 mm diameter piles socketed 4 m into rock, with lengths adjusted to excavation requirements.
- Shoring solution: A soil nail and shotcrete facing system designed, fully compliant with FHWA soil nail design guidelines.
- Reinforcement and drainage: Welded-wire mesh, water beams, and weep-hole systems to relieve hydrostatic pressures.
- Safety provisions: Conservative design factors addressing cavities, seismic activity, and variability in fill materials.

This schematic design ensures constructability, regulatory compliance, and seamless integration with the architectural and structural vision of the development.