GEOTECHNICAL ENGINEERING PRACTICE IN THE MYCENAEAN CIVILIZATION (1600-1100 BC)

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An overview of the archaeological and literature information on the Mycenaean geotechnical engineering projects and practices is provided. This preliminary investigation aims to provide some insight on the construction practices ("state-of-practice") of the Mycenaean Civilization.

IMPORTANT CONSIDERATIONS REGARDING THE AVAILABLE SOURCES OF INFORMATION

ARCHAEOLOGICAL FINDINGS/REMAINS

The proven use of a construction method in a project does not necessarily mean that other methods were not used.

Preserved remains most likely represent practices of monumental construction (higher construction quality).

Structures of monumental construction could have been destroyed in the course of time due to natural or human-induced causes.

High quality practices with non-durable materials (e.g. wood) disappear with time.

Different construction methods may result in the same project.

LITERATURE / ANCIENT TEXTS

For the Mycenaean civilization specifically:

Only limited texts on preserved plates written in the Mycenaean times

Homeric poems provide surprisingly large information but are written about 300-500 years later.

Other texts with pertinent information are written about 1000 years later

Thus, for all the literature resources: Possibility that the provided information is inaccurate.

Thus, there are inherent & important problems in evaluating information on Mycenaean geotechnical practices.

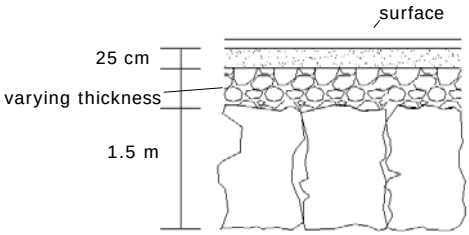
TYPES OF GEOTECHNICAL PROJECTS

A large number of project types:

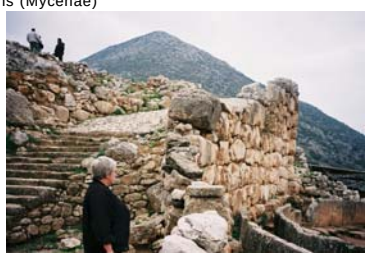
Fortifications (Mycenae)

underground shafts-graves ("Atreus" Tresury)

Tunnels (around Mycenae)



roads/pavements (cross-section after Jansen 2002 around Mycenae)



Retaining walls (Mycenae)

Excavations (interpretation of Greek excavation as described by Homer)

Hydraulic works / embankments Dams (Kopais works), by Iakovides, 2001

and bridges, harbors, quarries/mines, residential construction.

REMARKS

- Overall, similar construction techniques and materials (e.g. Cyclopean masonry, corbelled arch construction) are used in most projects.
- The scale and the variability in projects is impressive and suggest significant experience in construction. Observations suggest that the construction techniques improved with time and adjusted to the available resources.
- A more efficient method of construction probably existed than is currently assumed. This statement is based on the geomorphologic characteristics of the areas where the projects are located, the construction dates, the geographic distribution, the scale of the projects, the size of the construction materials etc. For example, it is commonly assumed that the Mycenaean walls were constructed using ramps (similar to the Egyptian pyramids). However, the geomorphic characteristics (located on a hill instead of a level surface), the existence of important structures nearby that would impede access, the size of the stones and the height at which they are placed suggest that an alternative, more efficient, method could have been used.
- There are still important questions that need to be answered regarding the Mycenaean construction practices. The method of construction (constructability) of the Mycenaean infrastructure needs to be studied further by archaeologists with the support of engineers.