

SITE INVESTIGATION FOR DAM CONSTRUCTION

Project report submitted by

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INTRODUCTION

A site investigation or soil survey is an essential part of the preliminary design work. Site investigation is performed in order to obtain information regarding the sequence of strata and the ground water level and also to collect samples for identification and testing.

British Standard Code of Practice BS5930 site investigations, lists the following as the main objects of a site investigation:

- 1) To assess the general suitability of the site for the proposed work.
- 2) To foresee and provide against difficulties that may arise during construction due to ground and other local conditions.
- 3) To enable an adequate and economic design to be prepared.
- 4) To predict any adverse effect of the proposed construction on neighbouring structures.

The first two objectives are mainly considered in this project in relation to a day construction scheme.

The exploration of a site is to assess the feasibility of a project, to plan and design appropriate foundations and to draw up bills of quantity for excavation. Normally most of the following information must be obtained:

- a) Type of rocks and soils are present, including the sequence of strata, the nature and thickness of superficial deposits and the presence of igneous intrusions.
- b) How these rocks are distributed over and under the site.
- c) The frequency and orientation of joints in the different bodies of rock and the location of any faults.
- d) The presence and extent of any weathering of the rocks and particularly of any soluble rocks such as limestones one.

- e) The ground water conditions, including the position of the water table and whether the ground water contains noxious material in solution, such as sulphates, which may affect.
- f) The presence of economic deposits which may be extracted by mining or quarrying, to leave concealed voids or disturbed ground.
- g) The suitability of local rocks and soils, especially those to be excavated, as construction materials.

Special information such as the seismicity of the region may also required.

A dam is an artificial structure erected to support a waterproof barrier designed to retain water above the level that it normally occupies at the site. Suitable provision is also made for directing calculated flows during the construction stage (diversion works) and for overspilling when the dam is fully operational.

Commonly used dams are:

- 1) Earth-fill or rock-fill dams, in which the barrier is either on the upstream face or in the center as a core wall.
- 2) Gravity dams of a masonry or mass concrete in which the barrier is the upstream face of the dam itself.

Dams in Cyprus can be generally grouped into two main divisions:

- 1) Earth-fill or rock-fill dams
- 2) Concrete or masonry dams

Emphasis in this report is given to site investigation for a rock-fill dam.

Dams in Cyprus started to construct since the decay of 1940. In the beginning it was just small dams mainly for diverting water. In the past few years important dams have been constructed such as Kouris, Asprokremmos, Lefkara dams. A typical dam is shown in Fig. 1.

The table on page 4 shows the dams constructed in Cyprus from 1961 until today, together with their storage capacities they have.

Also, the map of Cyprus shows the Dam Projects build until 1977.

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