

# ENGG GEOLOGY

GEOLOGICAL CONDITIONS AND THEIR INFLUENCE  
ON THE SELECTION , LOCATION , TYPE AND  
DESIGN OF CIVIL ENGG PROJECTS SUCH AS DAMS  
, RESERVIORS TUNNELS , HIGHWAYS, BRIDGES  
ETC.

Naeem Khan



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## **GEOLOGICAL CONDITIONS ON CIVIL ENGG**

### **PROJECTS :**

All important civil engg. Projects , like dam, reservoirs, tunnels roads, bridges and buildings etc., are constructed on rocks. It is therefore , essential that the engineer should have fullest knowledge possible of the strata through which works of construction are to be carried out or on which these have to rest. The main object of geological investigation for most engg projects is to determine .....

- The geological structure of area.
- The lithology of the area.
- The ground water condition of the region.

The Geological structure of the area which also includes: topography and geomorphology, is determined by conducting geological surveys.

The ground water conditions are of great significance in all major engineering structures. The relative position of water table with respect to the project must be thoroughly established and all variations in it during different periods in a year should be fully discovered.

The conditions involved in the Geological structures are given below.....

- **TOPOGRAPHY** : Topography of a region is single most important factor that control the selection of alignment of various civil engineering projects, such as dams , reservoirs, tunnels ,bridges etc. The topography maps would reveal the existence of various land features like valleys and the inflowing streams , the hills and their undulations.
- **NATURE OF BED ROCKS** : Nature of rocks involve following:
  - ❖ Types of rocks .
  - ❖ Properties of the rocks i.e. chemical composition , texture and hardness of the rocks.
  - ❖ Permeability of the rocks.
  - ❖ Spacing of joints in the rocks.
  - ❖ Structural features of the rocks i.e. dip , strike, outcrop etc.,
  - ❖ Structural defects of the rocks i.e. folds , faults, fissures etc.,
- **GROUND WATER TABLE** : The projects situated in the water logged areas get deformed and damage due to reasons connected with water logging. Due to the rise of water table the capillary moisture wets the soil there by decreasing the bearing

capacity of soils as a result construction projects deforms.

Therefore water table should be located at the suitable section.

- **GEOLOGICAL STRUCTURES:** The structural features of sedimentary and metamorphic rocks plays important role in design of engineering projects. The ideal foundation conditions , for the successful working of the projects , are that they should be built , over a uniform formation. Moreover the underlying rocks should be strong enough to bear weight of civil engineering projects.