

ENGINEERING GEOLOGY

**ROLE of Geology
in Selection of Construction site
of Maga Projects**

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- Site selection

INTRODUCTION

- Engineering geology may be defined as application of geological principles to engineering problems ,especially in civil engineering projects.
- Civil engineering projects are founded on materials which have been formed by geological processes.

ROLE OF ENGG. GEOLOGY

- Systematic knowledge regarding site.
- The knowledge of the geological work of natural agents such as water, wind etc.
- Feature of area and possible design of foundation

What Are Mega Projects?

- Which has Cost US 1 billion \$ or more
- Which gain large Public attention
- These projects may include bridges, tunnels , highways, airports, power plants, oil and natural gas extraction ,dams , town planning etc.

SELECTION OF SITE

Selection of site for mega projects will be on the following geological basis:

- Geological Survey
- BEARING capacity
- Slope stability
- Water table
- Nature of rock
- Seismic zone
- Soil erosion
- Altitude
- Climatic parameters

DAMS	TOWN PLANNING	BRIDGES
Bearing capacity	Bearing capacity	Topography
Seismic zone	Seismic zone Topography	Slope stability Bearing capacity
Sea level Topography	Underground water	Seismic zone
Slope stability Type of rock	Sea level	Sea level
Soil profile Water Table	Climatic parameters	Soil type

GEOLOGICAL SURVEY

- A **geological survey** is the systematic investigation beneath a given piece of ground for the purpose of creating a **geological** map or model.



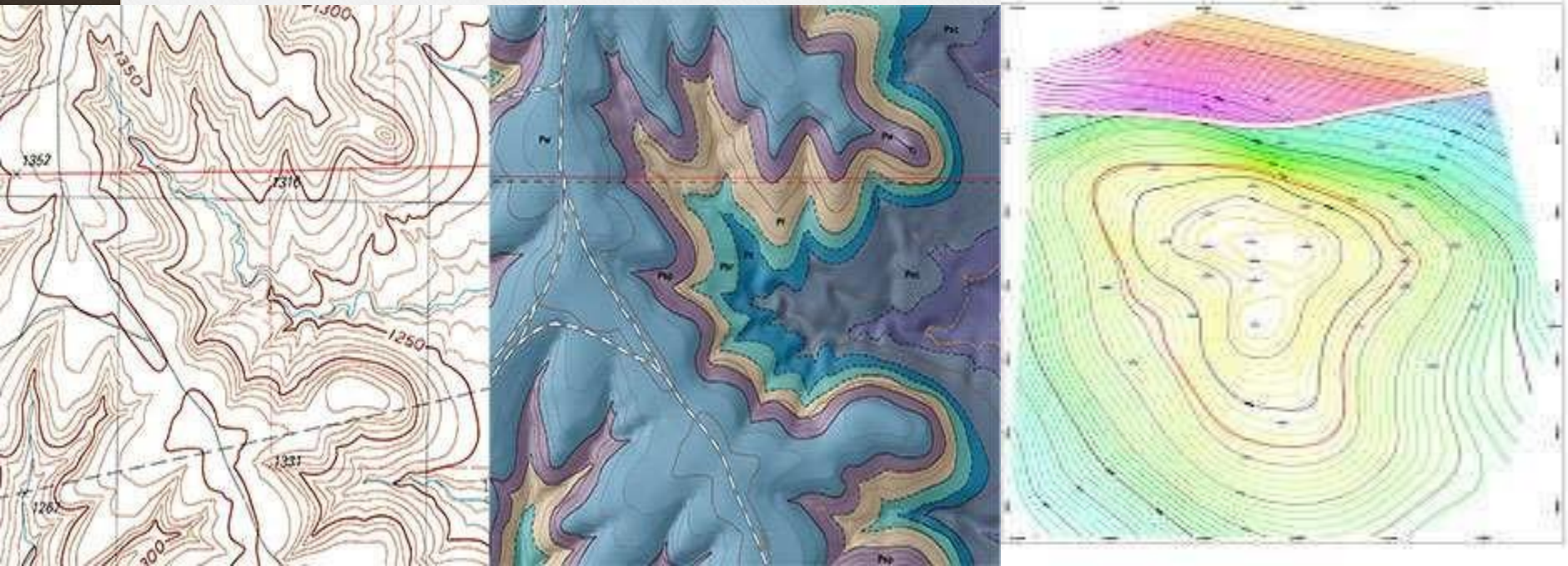
BEARING CAPACITY

- The ability of a soil to bear a load from a structure through foundation.
- This test can be performed through bore logs.



Geological mapping

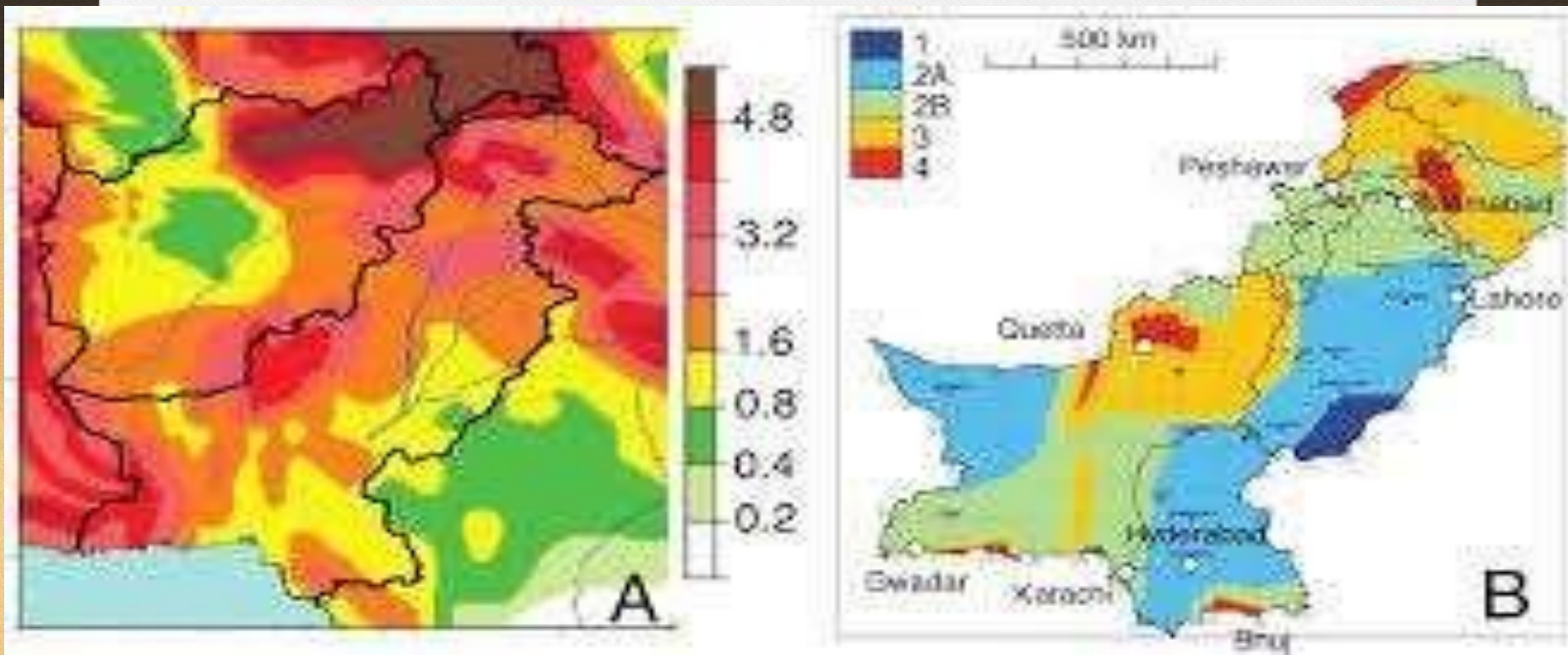
- Before construction, geological mapping is must for the site or surface of construction to show geological features like Rock units or geologic strata.



SIESMIC ZONES

- Location of construction site

- The probability that an earthquake will occur in a given geographic area.



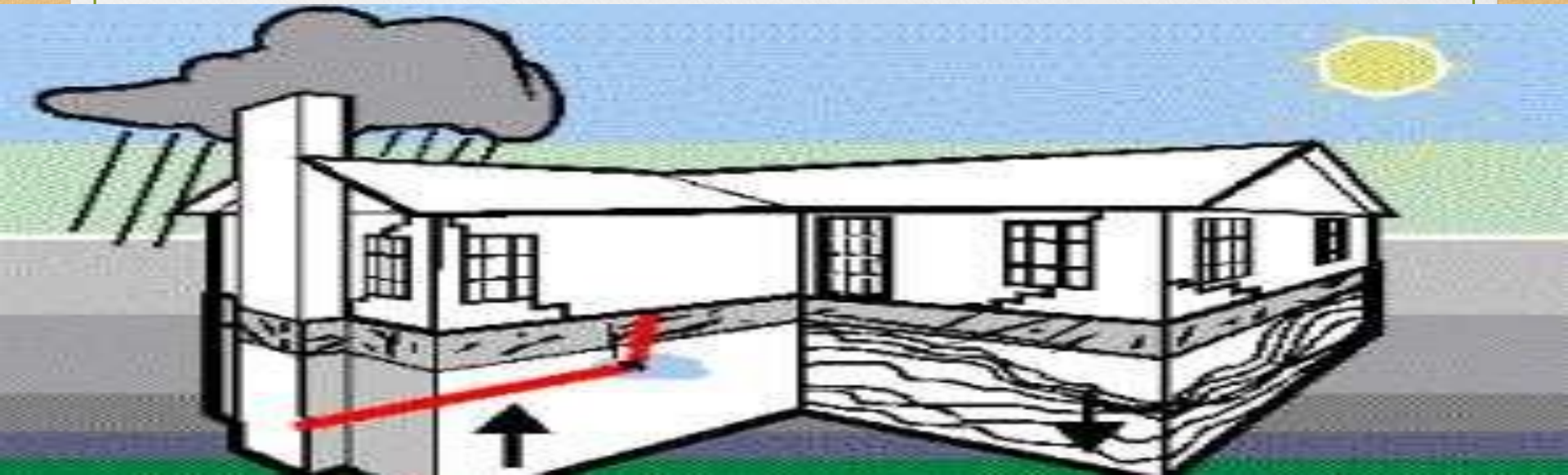
SLOPE STABILITY

- the resistance of inclined surface to failure by sliding or collapsing.
- Gravity is main factor
- Do not exceed the angle of repose



WATER CONTENT

- Water present beneath surface
- Water content must be checked for the safety of the project
- Water can penetrate which is a big hazard for the foundation which ultimately effects the structures



NATURE OF ROCK

- Rocks are extremely important in terms of their properties and strength
- The type of rock greatly effect projects
- organic or inorganic type of the rock.
- type of materials(minerals)



SOIL EROSION

- Naturally occurring process
- May be a slow process that relatively unnoticeable
- May occur at an alarming rate
- Wind and water are its main agents



SOIL TYPE

- Type of strata
- Type of mineral composition
- Alluvial soil, clay soil



ALTITUDE

- This can be considered as elevation level
- Elevation w.r.t sea level
- For reference point



CLIMATIC PARAMETERS

- Wind direction
- Temperature
- Humidity (MC)
- Atmospheric pressure

AIR PRESSURE

