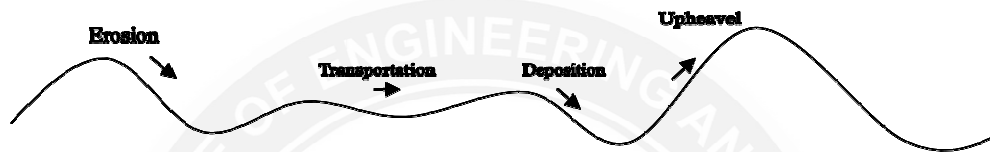


1.2. Soil Formation:-

It is a result of the geologic cycle continually taking place on the face of the earth.

- * Weathering
- * Transportation
- * Deposition
- * Upheaval



1.2.1 GEOLOGIC CYCLE:

Application (or) scope of Soil Engineering (or) Soil Mechanics :-

- Foundations - Design Considerations
- Retaining Structures - Earth Pressure determination & Analysis
- Stability of slopes - To check the stability of slopes
- Underground Structures - Design & Construction of tunnels, conduits etc.
- Pavement design - Behavior of sub grade under different loadings
- Earth Dam - Design and Construction.
- Miscellaneous Soil Problems - Soil Subsidence, Shrinkage and Swelling of soils.

Origin of Soils:-

Formed by Weathering of rocks due to Mechanical or chemical disintegration. When a rock surface gets exposed to atmosphere for an appreciable time, it disintegrates or decomposes into small particles and thus the Soils are formed.

1.2.2. PHYSICAL DISINTEGRATION:

It is occurred due to following physical processes.

- (i) Temperature changes.
- (ii) Rocks get broken into pieces when large stresses develop.
- (iii) Cracks due to action of the ice formed
- (iv) Abrasion.

- (v) There is no change in chemical composition.
- (vi) Soil are formed due to this are coarse grained soils.

1.2.3. CHEMICAL DISINTEGRATION:

It is due to following reasons:-

- * Hydration * Solution
- * Carbonation * Hydrolysis
- * Oxidation * Clay minerals are formed.

1.2.4. CLASSIFICATION OF SOILS

Based on its formation:-

- a) Residual Soil:-If the soil stays of the place of the formation just above the parent rocks.(shallow in depth)
- b) Transported soil:-When the soil has been deposited at a place away from the place of its origin (considerable depth)

Based on Transportation Agent:-

- a) Alluvial soils : Soils transported by rivers and streams.
- b) Aeoline soils : Soils transported by wind.
- c) Glacier soils : Soils transported by Glaciers.
- d) Lancastrians soils : Soils deposited in Lake Beds.
- e) Marine soils : Soils deposited in sea beds.
- f) Colluvial soils : Soils transported by gravitational forces.

Alluvial, marine and lacustrine - water transported soils.

Dune sand and loess - transported by wind.

Glacial drift - transported & re-deposited by glaciers. Glacial till

(Boulder day) - transported & re-deposited by ice.

Varied clay (fine groaned) - transported by blocked mother water.

Hard Pan - transported by ice presumes. (dense soil)

Talus - transported by gravitational forces.

1.2.5. Commonly used type of soils:-

- * Black cotton soils * Cobbles * Gravel
- * Cleary * Expansive clays * Sand
- * Boulders * Bentonite * Silt.

