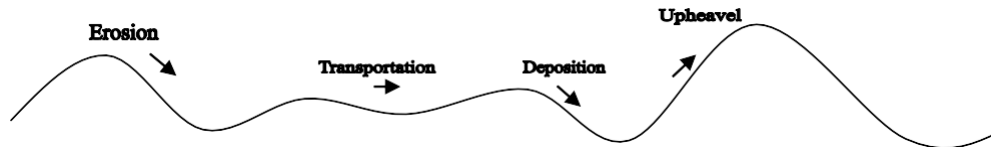


Soil Formation :- It is a result of the geologic cycle continually taking place on the face of the earth.

* Weathering * Transportation * Deposition * Upheaval



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 etc. | - | Design & Construction of tunnels, conduits |
| ▪ Pavement design | - | Behavior of sub grade under different loadings |
| ▪ Earth Dam | - | Design and Construction. |
| ▪ Miscellaneous Soil Problems - soils. | - | Soil Subsidence, Shrinkage and Swelling of |

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.

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 affine of the ice formed
- (iv) Abrasion.
- (v) There is no change in chemical composition.
- (vi) Soil formed due to this are coarse grained soils.

CHEMICAL DISINEGRATION: It is due to following reasons:-

- * Hydration * Solution
- * Carbonation * Hydrolysis
- * Oxidation * Clay

minerals are formed.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. Commonly used type of soils:-

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