

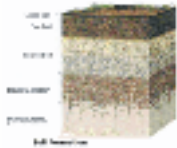
System Requirement:- IBM-PC Compatible Min P-III with Window-OS, 128 MB RAM/Multimedia Kit

### Theory module

**Features :** Theory, Figures, Photographs, Animations With Controller, Highlighter Tool, Note Creation Facility, Systematic Page Navigation, Printing Facility, Access to Videos at Appropriate Locations.

### List of Topics

#### Introduction of Soil Mechanics



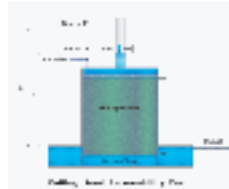
Introduction, soil, soil mechanics, soil engineering, application areas of soil engineering, soil formation, major soil deposits in India, particle size, soil structure, principal clay minerals, three phase system, weight volume relationship.

#### Engineering & Index Properties of Soil

Engineering properties, index properties, classification of soil, mechanical analysis i.e. sieve analysis, sedimentation analysis, grading of soils, uses of particle size distribution curve, shape of particles, consistency of soil, consistency limits & indexes.

#### Permeability and Seepage

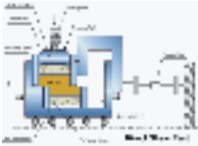
Introduction, Darcy's law and its validity, discharge velocity and seepage velocity, factors affecting permeability, constant head permeability test, falling head permeability test for determination of coefficient of permeability, modes of occurrence of water in soil i.e. structural water, adsorbed water, capillary water, surface tension, capillary rise



#### Compaction

Soil compaction phenomenon, objectives of compaction, factors affecting compaction, dry density and moisture content relationship, zero air voids line, effect of compaction of soil structure, field compaction methods, suitability of various methods of compaction placement water content, field compaction control

#### Shear Strength Parameter of Soil



Introduction, Mohr stress circle, pore pressure, total and effective stress, peak & residual strength Mohr-Coulomb failure-criterion, relationship between principal stresses at failure, shear tests, direct shear test, unconfined compression test, triaxial compression tests, drainage conditions and strength parameters, Vane shear test, shear strength characteristics of sands, normally consolidated clays, over-consolidated clays and partially saturated soils, sensitivity and thixotropy.

#### Stress Distribution In Soils

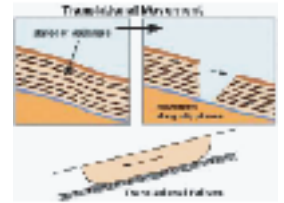
Stress at a point, Geostatic stresses, Elastic properties of soil, Boussinesq theory- Point load, Line load, strip load, pressure distribution diagrams on horizontal and vertical plane, pressure bulb, Westergaard's theory, Equivalent point load method, Newmark chart, Contact pressure.

#### Lateral Earth Pressure

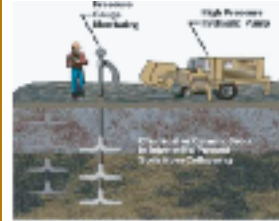
Rankine state of plastic equilibrium at rest, Active and passive states, Rankine's theory for cohesive and non-cohesive soils with dry backfill, submerged backfill, backfill with uniform surcharge, backfill with sloping surface, inclined back of wall, coulomb's theory, & Rebhann's graphical method of determination of earth pressure.

#### Stability of Slopes

Slope classification, slope failure, mode of failure, total and effective stress analysis, Infinite slope in cohesive and cohesionless soil, Finite slope stability by Swedish Circle method with slip circle and method of slices, Taylor's stability number, Land slides.



#### Soil Stabilization And Geosynthetics



Objective of soil stabilization, different soil properties affected by soil stabilization, Methods of stabilization such as mechanical, cement lime, chemical and polymer stabilization. Drainage methods - Well point, Vacuum dewatering and electrosmosis. Soil Reinforcement - Types of Geosynthetic material and different applications in Civil Engineering.

