

# SOIL PROPERTIES

## 1- PHYSICAL PROPERTIES:

\* Used to describe the soil. They are incorporated with the soil classification systems, and in some cases they are related to the mechanical properties.

- Color
- Odor
- Grain Size
- Grain Shape
- Specific Gravity
- Unit Weight
- Water Content
- Void Ratio
- Degree of Saturation
- Porosity

## II- INDEX PROPERTIES:

\* Used to classify the soil or to correlate with the mechanical properties.

- Atterberg Limits or Consistency Limits
- Moisture Content-Unit Weight Relationship
- Grain Size Distribution ([USDA Soil Classification System](#))
- Relative Density  $D_r$
- CBR
- LBR

## III- HYDRAULIC PROPERTIES:

\* Used for seepage and discharge analysis & to determine seepage force and pore water pressure.

- Permeability (k)

## **IV- MECHANICAL PROPERTIES:**

\* Used to determine settlement, bearing capacity, pavement thickness, friction, cohesion or adhesion.

- Stress - Strain Relationship
- Consolidation or Compressibility ( $C_c$  ,  $C_s$   $C_v$  ,  $P_c$  ,  $m_v$ )
- Soil Strength ( $t$ )