The road builder is primarily interested in the performance of soil as influenced by moisture content and changes of moisture content. All soil is derived from bedrock which forms the outer shell of the earth by gradual weathering and the disintegrating action of air, moisture, heat, cold, frost, and chemical agencies. Soils that exist where they are formed are said to be "residual"; those that have been carried from their place of origin by glaciers, wind, or water are called "transported soils."

Residual soils and those transported by wind, such as loess, and by lakes and rivers, such as silts, clays, and mucks, occur in the earth's crust in series of layers forming what is known as the "soil profile," figure 1. Soils of a profile graded by mechanical analysis are designated as "sands," "clays," "loams," "silt loams," etc. Sandy materials are described as "light-textured" and clays as "heavy-textured" soils. The chart, figure 2 developed by A. C. Rose (1) shows the mechanical grading of the various designations of texture.

Part of profile affected by seasonal change. During rains and thaws, moisture enters the soil by gravity and forms the ground water which seeps through permeable soil strata to feed wells and springs. Surface tension causes some of the precipitated moisture to penetrate the soil, independent of gravity, and may form a moistened soil layer above the ground water elevation, termed the "capillary fringe" (2). During dry weather, moisture rising from the water table by capillarity evaporates continuously from the surface of the ground unless prevented by an impervious covering, in which case the soil immediately below the covering may become saturated. Capillarity may thus be responsible for many serious road troubles, such as failure of a concrete pavement, unless proper drainage is provided to carry off the capillary moisture which would otherwise saturate the soil beneath the slab.

Soils expand during the penetration of moisture and shrink when evaporating.