SECTION 19 – WATER BEARING STRATA

0403. The position of water-bearing strata is an important factor in planning the excavation of cutting (see Figure 4.4)

0404. Although all soils are porous in that they can hold water either in the voids or films held by surface tension round the soil particles their permeability vary considerably. Permeability influence drainage and compaction characteristics and susceptibility to frost action.

0405. Gravelly soils are permeable. Soils that are predominantly sandy often have an open structure and are therefore permeable.
Even hard rock formations may be porous owing to fissures, and sedimentary deposits such as sandstone limestone and chalk may also be permeable and comparatively free draining.

0406. Permeable strata frequently overlie impermeable rocker clay. In such cases ground water is held permanently above the impermeable layer but the level of its surface (the water table) will very seasonally. When fresh water reaches this surface through percolation from above a slope develops in the water table to give the necessary head to instigate and maintain a flow to the outflow points.

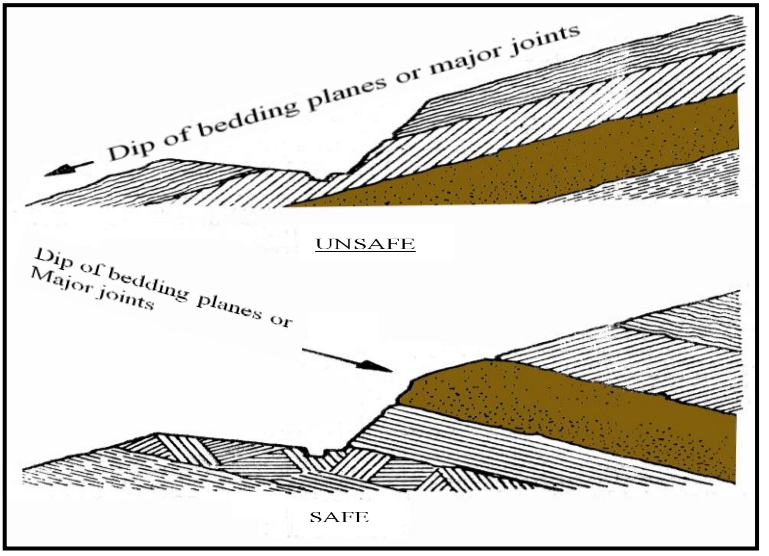

Figure 4-1: Safe and Unsafe Inclination of Rock Jointing in Side-Hill Cut

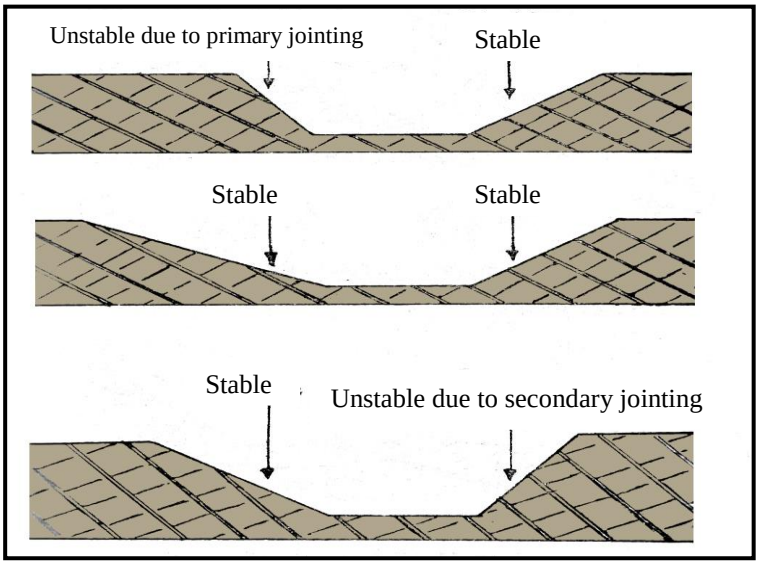

Figure 4-2: Safe and Unsafe Inclination of Rock Jointing in Cuttings

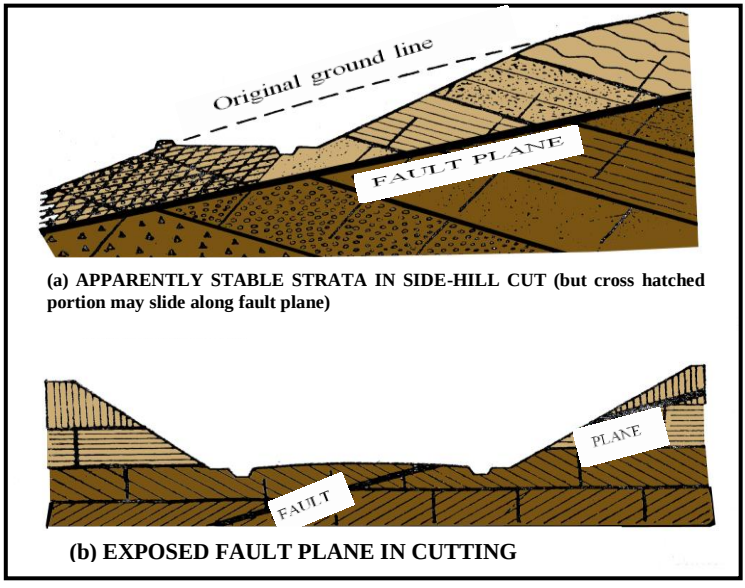

Figure 4-3: Faulted Strata

0407. An impermeable layer may overlie natural ground water of the latter is under hydrostatic pressure due to inclination of the strata cutting through the impermeable layer may release considerable quantities of water.

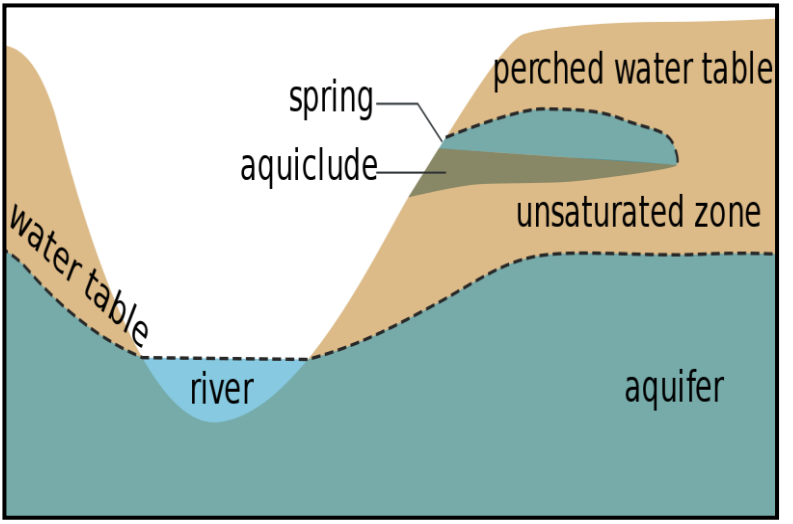

Figure 4-4: Main and Perched Water Tables above Impermeable Strata