

Figure 9a. Topple (Colorado Geological Survey et al., 1988).



Figure 9b. Topple, western Colorado (photograph by Colorado Geological Survey).

Rotational slide

A rotational slide is one in which the surface of rupture is curved concavely upward (spoon shaped) and the slide movement is more or less rotational about an axis that is parallel to the contour of the slope (Figures 10a, b). A "slump" is an example of a small rotational slide.

Translational slide

In a translational slide, the mass moves out, or down and outward along a relatively planar surface and has little rotational movement or backward tilting (Figure 11). The mass commonly slides out on top of the original ground surface. Such a slide may progress over great

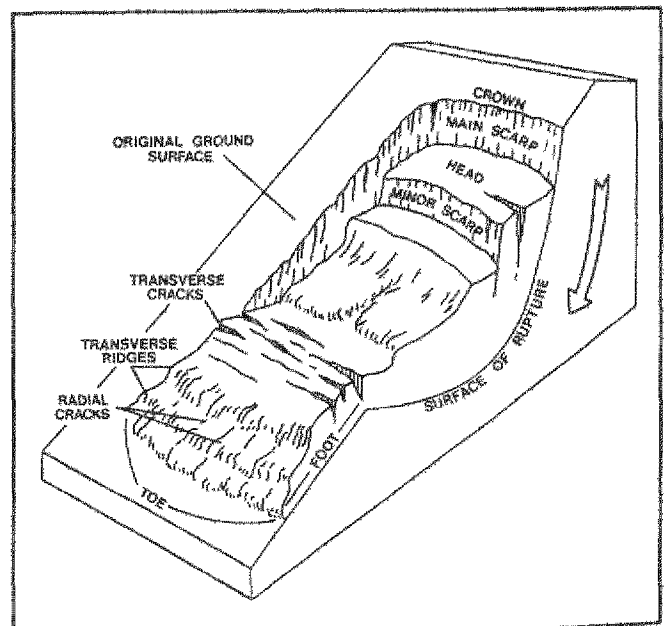


Figure 10a. Rotational landslide (modified from Varnes, 1978).



Figure 10b. Rotational landslide, Golden, Colorado (photograph by Colorado Geological Survey).

distances if conditions are right. Slide material may range from loose unconsolidated soils to extensive slabs of rock.

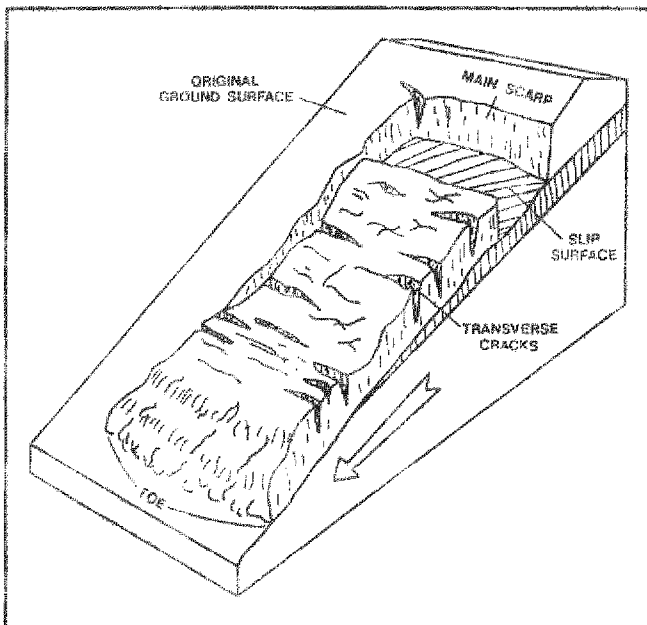


Figure 11. Translational slide (Colorado Geological Survey et al., 1988).

Block Slide. A block slide is a translational slide in which the moving mass consists of a single unit, or a few closely related units that move downslope as a single unit (Figure 12).

Lateral Spreads

Lateral spreads (Figures 13a, b) are a result of the nearly horizontal movement of geologic

materials and are distinctive because they usually occur on very gentle slopes. The failure is caused by liquefaction, the process whereby saturated, loose, cohesionless sediments (usually sands and silts) are transformed from a solid into a liquefied state; or plastic flow of subjacent material. Failure is usually triggered by rapid ground motion such as that experienced during an earthquake, or by slow chemical changes in the pore water and mineral constituents.

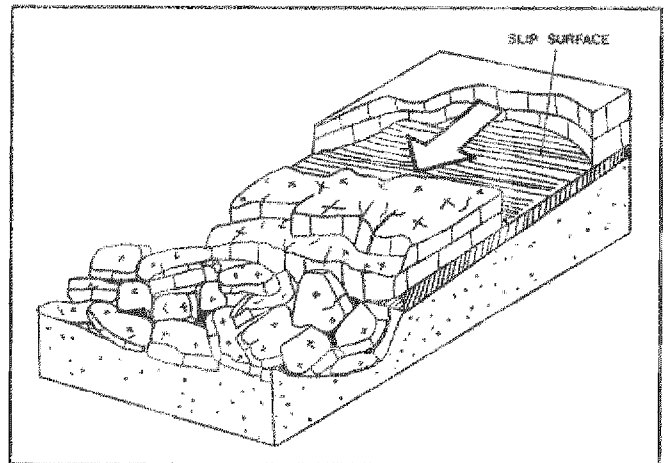


Figure 12 . Block slide (Colorado Geological Survey et al., 1988).

Flows

Creep

Creep is the imperceptibly slow, steady downward movement of slope-forming soil or rock. Creep is indicated by curved tree trunks, bent fences or retaining walls, tilted poles or fences, and small soil ripples or terracettes (Figures 14a, b).

Debris flow

A debris flow is a form of rapid mass movement in which loose soils, rocks, and organic matter combine with entrained air and water to form a slurry that then flows downslope. Debris-flow areas are usually associated with steep gullies. Individual debris-flow areas can usually be identified by the presence of debris fans at the termini of the drainage basins (Figure 15).

Debris avalanche

A debris avalanche is a variety of very rapid to extremely rapid debris flow.