

Landslide Control in the Rockies: An Example

Sometimes, whether the terrain is suitable or not, a decision is made to build in a certain location, and the result is often a nonstop battle against nature. Such a spot is the east side of Beartooth Pass in the Rocky Mountains, where the road descends rapidly to the town of Red Lodge, Montana. Roads in this area are few, and it is easy to see why; a sample of the topography is



shown in figure 8.28A. The slopes are frighteningly steep; the guardrails are dented from falling boulders. Spring is an especially dangerous time because when the soil is sodden from melted snow, it slides especially readily, often taking sections of road with it. The road is critical to local transportation and has, therefore, been regularly rebuilt after each slide.

Two decades or so ago, an attempt was made to stabilize several large expanses of the most slide-prone slopes by applying concrete to the slope surface (figure 1A-D). Realizing the danger of having water accumulate behind these concrete sheets, building up weight and pore pressure, the engineers added drainage holes (B). A return visit three summers later strongly suggested that this solution was not an unqualified success. The slope had continued to move, and the thin concrete sheets had buckled and cracked in many places (C,D). Furthermore, some very new asphalt below one such barrier (C) showed that the spring outwash had claimed the soil *underneath* the roadway there as well.