

addition, the means of application and the availability of particular types of mulch may be important considerations. Cost is also a consideration: Some material can be purchased and installed for as little as \$1800/acre (wood fiber) while other material is much more expensive, as much as \$18,000/acre (jute matting).

Slope Stability

Constructing new slopes presents a series of issues during and after construction. The stability of the slopes is the paramount concern. Slope design begins with understanding the character of the soil and the subsurface conditions. The shear strength of the slope materials will be a determining factor in how steep a designed slope may be without additional structural support. Shear strength is a combination of the grain-to-grain friction between soil particles and the cohesive forces that act to hold soil particles together. As the slope is made steeper, shear stress increases and the ability of the soil to resist gravity decreases. In general, graded slopes that do not exceed the angle of repose of a dry frictional soil should be stable.

Causes of slope failure

The grading operation usually involves removing the vegetative cover, the roots of which may serve to mechanically stabilize the slope. Any change in a slope that increases the slope angle will act to destabilize the slope as it increases the slope loading without increasing the strength of the slope (see Table 3.6). The weight of the soil and the added weight of water acts to increase the stress by increasing the load on soil particles farther down the slope and, perhaps, compressing the lower soils until failure occurs. On projects requiring the creation of steep slopes, a stability analysis should be performed by a soil scientist or soil engineer. Slope failures can occur for a variety of reasons both natural and human. Natural causes of failure include slippage along existing soil transitions or soil structural weaknesses.

Instability in slopes can be addressed by either increasing the resistance of the slope to failure or by minimizing the causes of failure. The causes of failure can be addressed either by avoiding the unstable area or by modifying the

TABLE 3.6 Common Causes of Slope Failure

1.	Overloading slope (weight of buildings or roads)
2.	Increasing fill on slope without adequate drainage
3.	Removing vegetation
4.	Increasing the slope grade
5.	Increasing slope length by cutting at bottom of slope
6.	Changing surface drainage route
7.	Changing in subsurface drainage route