

Gradient Terraces



Terraces can be incorporated into the grading plan to shorten the length of the slope and reduce the velocity of stormwater flows
(Source: Boaze et. al, 2000)

Description

Gradient terraces are earthen embankments or ridge and channel systems that reduce erosion by slowing, collecting and redistributing surface runoff to stable outlets that increase the distance of overland runoff flow. Terraces hold moisture and help trap sediments, minimizing sediment-laden runoff.

Applicability

Gradient terraces perform most effectively in barren areas with an existing or expected water erosion problem. Gradient terraces are effective only if suitable runoff outlets are available. Do not build terraces on slopes comprised of rocky or sandy soil because these soil types may not adequately redirect flows.

Siting and Design Considerations

Gradient terraces should be properly spaced and constructed with an adequate grade, and they should have adequate and appropriate outlets toward areas not susceptible to erosion or other damage. Acceptable outlets include grassed waterways, vegetated areas, or tile outlets. General specifications require that:

- Whenever possible, use vegetative cover in the outlet.
- At the junction of the terrace and the outlet, make the terrace's water surface design- elevation no lower than the outlet's water surface design-elevation when both are performing at design flow.
- When constructing the terrace system, follow dust control procedures.
- When constructing the terrace system, follow proper vegetation/stabilization practices.

Limitations

Gradient terraces are inappropriate for use on sandy or shallow soils, or on steep slopes. If too much water permeates a terrace system's soils, sloughing could occur, potentially increasing cut and fill costs.

Maintenance Considerations

Inspect the terraces after major storms and at least once annually to ensure that they are structurally sound and have not eroded.

References

Boaze, P., and B. Wiggins. Building a Major Highway in Mountainous East Tennessee: Environmental Impacts. *Land and Water*. July/August 2000: 20-23.

USEPA (U.S. Environmental Protection Agency). 1992. *StormWater Management for Industrial Activities: Developing Pollution Prevention Plans and Best Management Practices*. EPA 832-R-92-006. U.S. Environmental Protection Agency, Office of Water, Washington, DC.