



DWR – NPDES-SOP – G – 16 –Erosion Prevention and Sediment Control Handbook – 01092026

Erosion Prevention and Sediment Control Handbook

4.2.4 Grade Controls



Source: USEPA (2021)

Definition and Purpose

Land grading involves reshaping the ground surface to proposed elevations, as approved construction drawings from a professional engineer or other qualified professional indicate. This practice is essential for creating a suitable topography for buildings, roads, parking lots, etc. while also managing stormwater runoff, minimizing soil erosion, and controlling sedimentation during and after construction.

Appropriate Applications

Land grading is applicable to sites where the natural topography must be altered to accommodate new land uses or where shaping the landscape can help reduce erosion risks and lower the cost of sediment control (ALSWCC, 2018). It is particularly useful in uneven terrain or areas with highly erodible soils, as it can help stabilize slopes and manage overland flow (USEPA, 2021). Steep slopes contribute to more erosive forces and sediment loss, while gentle gradual slopes can reduce erosion and allow for easier stabilization.

Limitations and Maintenance

Whenever possible, grading activities should not alter existing overland drainage patterns, as this could lead to elevated runoff velocities (USEPA, 2021). Therefore, pre-existing drainage patterns should be documented before grading activities occur. Areas with high water tables may require subsurface drainage systems to prevent instability (ALSWCC, 2018; KTC, 2015). Grading must not occur where sensitive areas, riparian buffers, and water



DWR – NPDES-SOP – G – 16 –Erosion Prevention and Sediment Control Handbook – 01092026

Erosion Prevention and Sediment Control Handbook

resources exist, unless proper authorization has been received. Excavated materials that are stored onsite must be properly stockpiled and stabilized (Section 4.2.6.10) or offsite transport and disposal should be arranged (USEPA, 2021). Offsite disposal areas may be included in permitted areas and therefore may also require proper storage and stabilization.

Construction personnel should inspect all EPSC measures used to stabilize graded areas and divert water around or past graded areas as well as the graded area for signs of gully erosion. Graded areas must be stabilized within 14 days of inactivity or completion of construction or seven days if the graded area is steeper than 35%. This includes onsite and offsite stockpiles (if offsite stockpiles are under permit coverage) that are not actively being used.

Planning and Design Considerations

Effective land grading requires careful planning and design to ensure stability, minimize erosion, and control sediment transport. A qualified professional develops comprehensive grading plans that account for existing soil types, slopes, drainage patterns, and environmentally sensitive areas (USEPA, 2021). The plan typically outlines the grading limits, proposed elevations, and accompanying EPSC measures. Grading limits are not to encroach on property lines, stream banks, vegetation to be preserved, or environmentally sensitive areas without proper authorization. The designer is to specify grades that are not too steep for long-term maintenance (ALSWCC, 2018). Before grading begins, a detailed site survey is often conducted to map existing elevations, drainage patterns, and utilities. To reduce soil disturbance, the grading plan can be phased, limiting the extent of exposed areas at any given time. Furthermore, construction exits, identification of sensitive areas, diversions, and sediment control measures should be in place before grading begins to prevent offsite sediment transport.

Topsoil needs to be stripped, stockpiled in a designated area, and stabilized with vegetation or protective covering for later use in revegetation. Areas designated for clearing are to have all vegetation, roots, and debris removed, while fill areas are to be free of loose soil and oversized rocks to provide a stable foundation. A geotechnical professional can oversee fill placement, ensuring that materials are compacted in layers to achieve the necessary bearing strength for structures. Extended slope lengths and steep slopes should be avoided whenever possible as they can increase rill and gully erosion. On long or steep slopes consider diversions (Sections 4.2.1 and 4.2.2), benches and terraces (Section 4.3.1), or other measures at specified intervals (Table 4.2.4-A) to reduce erosion potential (ALSWCC, 2018). For slopes steeper than 3H:1V, additional stabilization methods such as RECPs (Section 4.2.6.6) can be a better method to establish stabilization.



DWR – NPDES-SOP – G – 16 –Erosion Prevention and Sediment Control Handbook – 01092026
Erosion Prevention and Sediment Control Handbook

Table 4.2.4-A: Guidelines for spacing breaks in slope. Source: ALSWCC (2018).

Slope (H:V)	Horizontal Spacing (ft)
1:1	20
2:1	40
3:1	60
4:1 and 5:1	80
6:1 to 9:1	120
10:1 or flatter	200

Note: Using professional judgement, horizontal spacing may be adjusted to account for site specific conditions

Example Application

No formal design or quantities are required for this measure and therefore are not presented here.

References

ALSWCC. (2018). *Alabama Handbook for Erosion Control, Sediment Control and Stormwater Management on Construction Sites and Urban Areas.*
KTC. (2015). *Best Management Practices (BMPs) for Controlling Erosion, Sediment, and Pollutant Runoff from Construction Sites.*
USEPA. (2021). *Stormwater Best Management Practices: Land Grading.*