

2021 Virginia Construction Code
CHAPTER 18 SOILS AND FOUNDATIONS
SECTION 1804
EXCAVATION, GRADING AND FILL

1804.1 Excavation near foundations.

Excavation for any purpose shall not reduce vertical or lateral support for any foundation or adjacent foundation without first *underpinning* or protecting the foundation against detrimental lateral or vertical movement, or both [in accordance with Section 1803.5.7](#).

1804.2 Underpinning.

Where *underpinning* is chosen to provide the protection or support of adjacent structures, the *underpinning* system shall be designed and installed in accordance with provisions of this chapter and [Chapter 33](#).

1804.2.1 Underpinning sequencing.

Underpinning shall be installed in a sequential manner that protects the neighboring structure and the working construction site. The sequence of installation shall be identified in the *approved construction documents*.

1804.3 Placement of backfill.

The excavation outside the foundation shall be backfilled with soil that is free of organic material, construction debris, cobbles and boulders or with a *controlled low-strength material (CLSM)*. The backfill shall be placed in lifts and compacted in a manner that does not damage the foundation or the waterproofing or dampproofing material.

Exception: *CLSM* need not be compacted.

1804.4 Site grading.

The ground immediately adjacent to the foundation shall be sloped away from the building at a slope of not less than 1 unit vertical in 20 units horizontal (5-percent slope) for a minimum distance of 10 feet (3048 mm) measured perpendicular to the face of the wall. If physical obstructions or lot lines prohibit 10 feet (3048 mm) of horizontal distance, a 5-percent slope shall be provided to an *approved* alternative method of diverting water away from the foundation. Swales used for this purpose shall be sloped not less than 2 percent where located within 10 feet (3048 mm) of the building foundation. Impervious surfaces within 10 feet (3048 mm) of the building foundation shall be sloped not less than 2 percent away from the building.

Exceptions:

1. Where climatic or soil conditions warrant, the slope of the ground away from the building foundation shall be permitted to be reduced to not less than 1 unit vertical in 48 units horizontal (2-percent slope).
2. Impervious surfaces shall be permitted to be sloped less than 2 percent where the surface is a door landing or *ramp* that is required to comply with [Section 1010.1.4](#), [1012.3](#) or [1012.6.1](#).

The procedure used to establish the final ground level adjacent to the foundation shall account for additional settlement of the backfill.

1804.5 Grading and fill in flood hazard areas.

In *flood hazard areas* established in [Section 1612.3](#), grading, fill, or both, shall not be *approved*:

1. Unless such fill is placed, compacted and sloped to minimize shifting, slumping and erosion during the rise and fall of *flood* water and, as applicable, wave action.
2. In *floodways*, unless it has been demonstrated through hydrologic and hydraulic analyses performed by a *registered design professional* in accordance with standard engineering practice that the proposed grading or fill, or both, will not result in any increase in flood levels during the occurrence of the *design flood*.
3. In *coastal high hazard areas*, unless such fill is conducted or placed to avoid diversion of water and waves toward any building or structure.
4. Where *design flood elevations* are specified but *floodways* have not been designated, unless it has been demonstrated that the cumulative effect of the proposed *flood hazard area* encroachment, when combined with all other existing and anticipated *flood hazard area* encroachment, will not increase the *design flood elevation* more than 1 foot (305 mm) at any point.

1804.6 Compacted fill material.

Where *shallow foundations* will bear on compacted fill material, the compacted fill shall comply with the provisions of an *approved* geotechnical report, as set forth in [Section 1803](#).

Exception: Compacted fill material less than 12 inches (305 mm) in depth need not comply with an approved report, provided it is a natural non-organic material that is not susceptible to swelling when exposed to moisture and it has

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been compacted to a minimum of 90-percent modified proctor in accordance with ASTM D1557. The compaction shall be verified by a qualified inspector approved by the building official. Material other than natural material may be used as fill material when accompanied by a certification from an *RDP* and approved by the building official.

1804.7 Controlled low-strength material (CLSM).

Where *shallow foundations* will bear on *controlled low-strength material (CLSM)*, the *CLSM* shall comply with the provisions of an *approved* geotechnical report, as set forth in [Section 1803](#).