

DATE: January 2019

TERRASTOP® REINFORCED BACKFILL GUIDELINES

Soil materials used behind Terrastop® walls are of great importance as they serve to anchor the geogrid layers embedded in the wall and become integral component of the entire composite system which gives structural integrity to the reinforced mass contained by the interlocked Terrastop® concrete units.

In general, soil materials encountered at the site may be suitable as structural fill, so long as they are free of organic matter, waste material, debris, frozen material and rock or stones larger than one inch (2.54 cm). Expansive and high plasticity clays are also considered deleterious and undesirable, and therefore not suitable for this use.

Additionally, soils utilized as structural backfill for Terrastop® retaining walls must have low susceptibility to frost, and have a liquid limit of less than 40 and a plasticity index lower than 20.

Structural fill materials suitable for installation as components of the geogrid-reinforced Terrastop® system should preferably be coarse granular (gravels, sands) and must consist of inorganic, low plasticity soils such as classified by USCS as GW, GM, GC, SW, SO and SC, but no less than SM. ML and CL materials may be considered, provided they meet the tested liquid and plasticity indices specified above, and which are graded so that no more than 35% is able to pass a U.S. Standard sieve # 200.

All material to be used for reinforced backfill construction, whether native or imported, should be approved by a third party Geotech, and tested for suitability and quality, including particle gradation, plasticity and dry density, by an independent laboratory prior to its installation

Recommended pre-use testing should include ASTM D422 (Analysis, particle size), ASTM D4318 (Atterberg Limits), and ASTM D698 (Standard Proctor).

Minimum parameters for Terrastop® retaining wall design are given in the Table below.

TERRASTOP® REINFORCED SOIL DESIGN PARAMETERS					
Reinforced Soil Classification	Unit Weight (pcf)	Internal Friction Angle	Cohesion (psf)	Earth Pressure Coefficient	
				Active	at Rest
SM	125	30	0	0.31	0.47

Installation of structural backfill should be in lifts not deeper than 6” (15 cm). Large compaction equipment must not be used within 6 feet (180 cm) of Terrastop®; small plate compactors, other than “rammers”, should be used within that zone and worked for a minimum of three (3) passes to attain 95% of the Standard Proctor dry density of the backfill material as tested in the lab.

Hand operated roller compactors may be used beyond the 72” zone.

Site testing of backfill compaction shall be carried out by the Geotech consultant of record.

Source: NCMA Design Manual for Segmental Retaining Walls, 3rd. Ed.