



TERRASYSTEM®

TERRA-3000®

FLOOD EMBANKMENTS

DAMS AND DIKES CONSTRUCTIONS

DAMS AND DIKES

Flood dams or dikes are usually made up of a sand core, and usually covered of a one or two- meter thick layer of cohesive materials such as clay / loam.

Grass plants prevent erosion and increase the stability of the constructions.



Flood dams and dikes serve to avert temporary hazards such as flood or storm flooding.

CREVASSES

A crevasse is a failure of a dam or a dike. A dam break is unfolding by hydrostatic pressure and the softening of the soil material. The sheer stress pushes the softened material away horizontally.



TERRA-3000®

The resulting insights of the dam related problems are therefore geotechnical.

The Geotechnical Engineer recognises several methods by which the physical properties of soils can be positively influenced.

One of these methods, which has been proven, especially in road construction and earth works, is the soil stabilisation with TERRA-3000®.

The soil stabilisation with TERRA-3000® improves the fitting ability and compressibility of cohesive clay loam soils. A long-term sustainability, durability, volume stability as well as water resistance and frost resistance.

ELECTRO-PHYSICAL PROCESS

The ground stabilisation with TERRA-3000® based on an electro-physical process. Adhesive film of water in the soil material is dissolved and prepared for ion exchange.

Mutual repulsion effect of the soil material is eliminated by changing the electrical charge, which the atoms can move closer together.

With adequate compaction, the material is agglomerated and the capillary action adjourned.

RESULT: firm and solid, freeze proof, broad waterproof, in this state irreversible soil material.

DEVELOPMENT AND INSTALLATION - TERRA-3000®

- Soil analysis by sieve analysis of the to be treated soil. It requires at least a 15% clay content. Optimal is 30% loam (<0.063mm), 35% sand (0.063-2mm) and 35% gravel (>2mm).
- The addition of TERRA-3000® additive to achieve an optimum compression for high densities.
- The moisture of the soil material, before compaction, should be near the OMC (Optimum Moisture Content).

Please refer to the TERRA-3000® Product Guide for more information on TERRA-3000® product.

DAM CONSTRUCTION METHOD

Smaller Dams

The dam can be built up to a dam body, made up of several 30cm soil- TERRA-3000®-layers, piece by piece. The base of the fill should be based on natural ground without Humus. The respective layer, treated with TERRA-3000®, is applied to the dam-layer soles and should be compacting with 10 tons minimum on the roller after every layer. Compact constantly! The higher the compression, the higher the CBR values can be achieved!

The use of a sheep foot roller, the kneading of the clay material, is an advantage.

The first layer, the dam-layer sole, should be lay 30cm minimum under the dike reaching stratum. With this, a possible undercutting of the dam body is prevented.

Should the dam be exposed to higher loads by heavy traffic, you then construct the dam-top-layer from 30% loam-contingent, 35% sand-contingent, 35% gravel-contingent.

In normal traffic, this is not necessary.

Larger Dams

For larger dams with relatively high bulk cubature, the complete dam can be covered with one or, depending on the requirements, two layers of each 30cm soil- TERRA-3000®-mixture. The dam core may consist of untreated cohesive embankment fill material, which should be well compacted. In every case, the dike-base should consist of a TERRA-3000®-Soil-Layer and are applied as described above.

If this is not possible, the dam tongue should be constructed much deeper as the adjacent upper soil-layer which reaches the dam. With that a possible undercutting of the dam will prevent.

The development of the stabilising layer or layers of this, is identical to the previously described procedure, except that the dam with the stabilised soil will be irreversibly coated and sealed.

For reasons of aesthetics and adaptation in the landscape, the embankment with a layer of topsoil must be covered with appropriate planting. In the case of using a sheep foot roller, the resulting sheep foot pattern in the stabilised layer will be used as an armature for the planting.

SOIL STABILISATION AND TERRA-3000®

The bearing capacity of the soils, which are treated after TERRA-3000® system, exhibit a higher stability and sustainability.

A 25 to 30cm loam / clay-sand-gravel soil layer, after the TERRA-3000® system reaches a capacity of ≥ 100 MN / m². The capillary action of the soil is extensive interrupted and relatively weather and waterproof.

Dams and dikes, which are armed after TERRA-3000®, are more resistant against floods and water seepage. With the treatment of TERRA-3000® and the high compacting of the earthworks, a relative impermeability is created. A rapid maceration is decelerated or even prevented.

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