

## Storage, handling and laying guide Enkamat® and Enkamat® A20

### Storage of Enkamat

It is advisable to store Enkamat in its original wrapping; covering of any rolls remaining in the open for long periods is recommended.

### Handling Enkamat A20

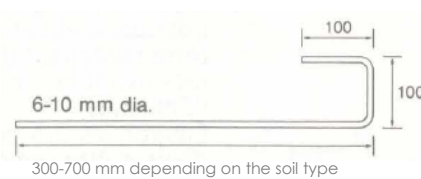
To unload Enkamat A20 without damage the hood of the truck must be removed. For transportation on site and installation a certified spreader-bar with end-caps is provided. This piece of equipment is able to lift 2.5 tons. No other equipment should be substituted for the items provided. The empty poles and the remaining attributes are returnable after installation by Bonar.

### Storage of Enkamat A20

Enkamat A20 will be delivered on rolls with a diameter of approx. 0.80 m. The rolls should not be stacked more than two rolls high. During hot conditions rolls of Enkamat A20 should be covered to prevent softening of the bitumen.

### Fixing pin details

The diameter and length of the fixing pins shall be chosen to suit the site and soil conditions; minimum dimensions are 6 mm diameter and 300 mm length for Enkamat, whereas Enkamat A20 requires minimum values of 8 mm diameter and 700 mm length. We advise to use ribbed mild steel.

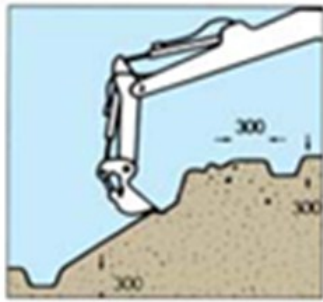


### Note:

As vegetation is an integral part of the Enkamat erosion control system, the establishment of a vegetative cover is an important factor which should not be underestimated. For this reason the following points should be considered:

- soil conditions under the Enkamat should be capable of supporting good growth.
- seed mixtures should be chosen to suit the particular Soil and climatic conditions, as well as the land use.
- the use of fertilizers and hydrophilic materials can prove beneficial in establishing vegetation.

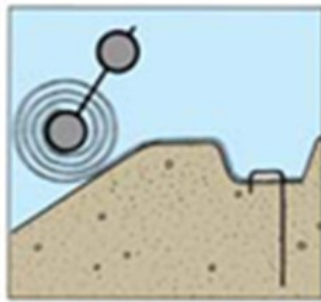
## Laying guide Enkammat



### 1. Excavation

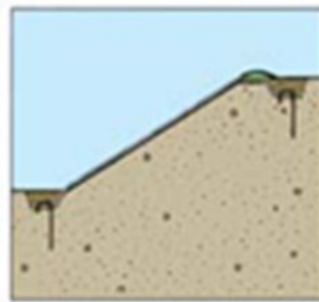
Excavate the slope to as smooth profile, free from vegetation, roots, stones, etc., filling any voids. The slope must be stable and properly compacted, in particular in the backfilled areas. Excavate anchor trenches at the toe and shoulder of the bank not less than 300 mm deep (see overleaf for alternative details). If the soil is of poor quality, the surface layer should be improved by the inclusion of well compacted top soil.

*Important:*  
Enkammat is an erosion control material, and will not increase the internal stability of unstable slopes.



### 2. Laying

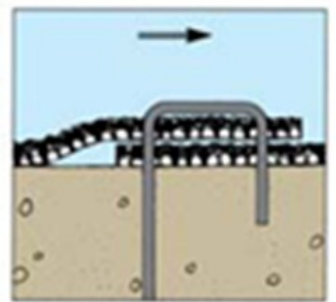
Place the matting in either trench, pin at 1 meter centers, unroll Enkammat and slightly tensioned. Enkammat 7220 and 7210 should be laid flat-back down. Work either from the shoulder down or from the toe up; we advise against longitudinal installation on steep slopes. Cut to the length required with a sharp blade and pin at 1 meter centers into the other trench.



### 3. Backfilling the trenches

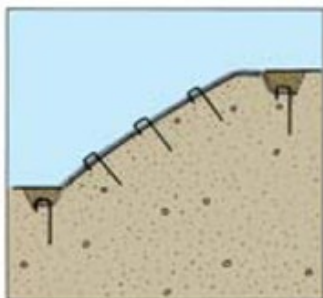
Backfill the anchor trenches and compact.

*Important:*  
Concentrations of surface water run off should be prevented from flowing over the newly laid slope either by a small bund along the shoulder or diversion through gutters or pipes laid on the slope.



### 4. Securing of overlaps

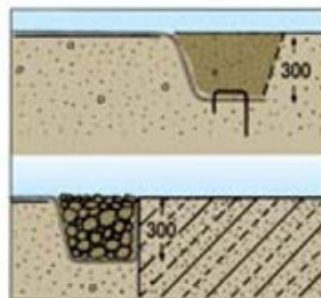
In watercourses overlaps of 150 mm min. should be made with the upstream section laid over the downstream section. All overlaps should be pinned at max. 1 meter centers; in severe conditions additional pins at 500 mm centers are recommended. Particular attention should be paid to pinning at water level. On dry slopes overlaps of 100mm are required.



### 5. Intermediate pinning

It is essential to ensure total contact between Enkammat and the underlying soil. Intermediate pinning at regular intervals is required at high loadings. An ideal slope will be slightly convex. A concave slope should be pinned on a 1 m grid. Normal intermediate pinning would be at a rate of 1 pin every 2-3 m<sup>2</sup>.

*Important:*  
Intermediate pinning of the matting into any low spots should be carried out to ensure total contact between Enkammat and the soil below. However, it is best to backfill or re-profile all such low spots or voids.



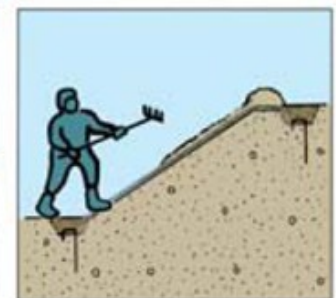
### 6. Securing the edges

Free edges, for example the upstream side of the mat, should be adequately secured; the connection to hard revetments or structures requires special attention. See overleaf for alternative details.



### 7. Seeding

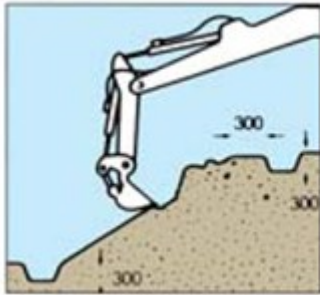
Seed the empty Enkammat area above normal water level with 20 g/m<sup>2</sup> of suitable indigenous seed, and plant rhizomes or aquatic plants below normal water level (or spread some soil containing rhizomes prior to laying the Enkammat). 2/3 of the seed is to be placed into the open mat, the remaining 1/3 is to be sown on top of the finished profile. See note on page 1.



### 8. Topsoil filling

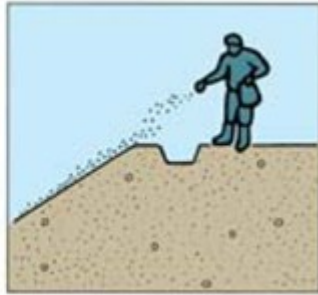
Rake in friable top soil to give a cover of 10 mm to 20mm over the Enkammat. Stone chippings should be considered where Enkammat is to be permanently submerged or subjected to high water velocities (approximately 15 kg/m<sup>2</sup> of 2-6 mm angular gravel to be raked in prior to top soil filling of the upper section). The recommended soil cover results in optimum filling of the mat after natural compaction.

## Laying guide Enkamat A20



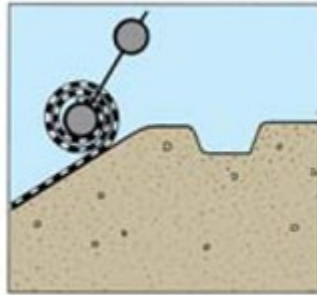
### 1. Excavation

Excavate the slope to a smooth profile, free from vegetation, roots, stones, etc., filling any voids. The slope must be stable and properly compacted, in particular in backfilled areas. Excavate anchor trenches at the toe and shoulder of the embankment not less than 300 mm deep. If the soil is of poor quality, the surface layer should be improved by including some topsoil.



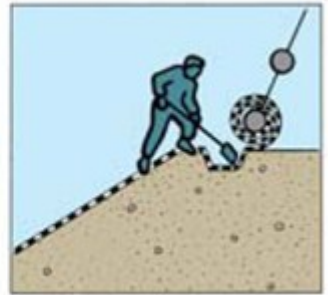
### 2. Seeding

Seed the area above normal water level with 30 gr/m<sup>2</sup> of suitable seed, and plant rhizomes or aquatic plants below normal water level (or spread some soil containing rhizomes prior to laying Enkamat A20). See note on page 1.



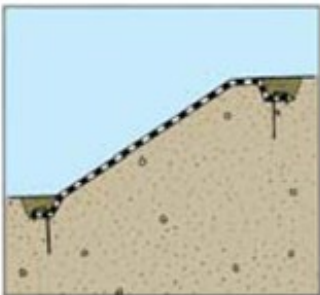
### 3. Laying

Place the matting in the trench, pin at 1 meter centers and unroll Enkamat A20. Work either from the toe up (recommended) or from the shoulder down; we advise against longitudinal installation. Keep the roll on or near the ground during installation to avoid unintentional unrolling. The installation of Enkamat A20 at temperatures below 5°C is not recommended.



### 4. Cutting to length

Cut to the length required with a spade or disc cutter. If the roll has to rest on the slope or close to the brink of the bank it should be secured to prevent uncontrolled unrolling. People should not work or stand on the downhill side of the roll for safety reasons. Eye shields should be worn when using a disc cutter. Pin the Enkamat A20 at 1 m centers into the second trench.

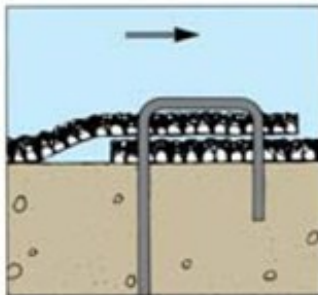


### 5. Backfilling to trenches

Backfill the anchor trenches and compact.

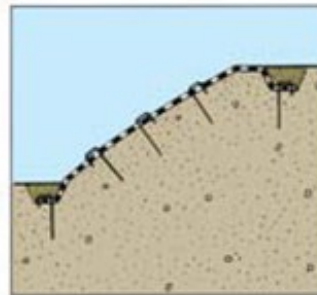
#### Important:

Concentrations of surface water run off should be prevented from flowing over the newly laid slope either by a small bund along the shoulder or diversion through gutters or pipes laid on the slope.



### 6. Securing of overlaps

Overlaps of 300 mm should be allowed for adjacent sections laid 'in-the-dry', 500 mm if laid 'in-the-wet'. All overlaps should be formed up-stream over down-stream and pinned at 1 meter max. centers. In areas of turbulence or high velocities, pinning at 500 mm centers is recommended. Particular attention should be paid to pinning at water level and in the tidal zone.

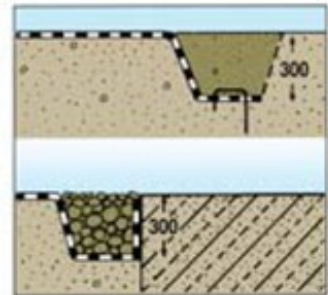


### 7. Intermediate pinning

In severe conditions we recommend the placing of intermediate pins at a rate of 1 pin every 3-4 m<sup>2</sup>.

#### Important:

Intermediate pinning of the matting into any low spots should be carried out to ensure total contact between Enkamat A20 and the soil below. However, it is best to backfill or re-profile all such low spots or voids.

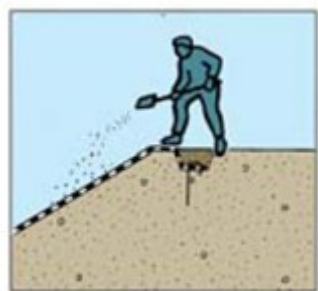


### 8. Securing the edges

Free edges should be adequately secured; the connection to hard revetments or structures requires special attention. See overleaf for alternative details.

### 9. Blinding

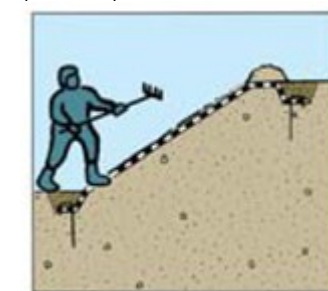
If laid during the summer months, Enkamat A20 should be blinded with a thin layer of sand or friable top soil to prevent any heat absorption from damaging the seed (not more than a few mm cover).



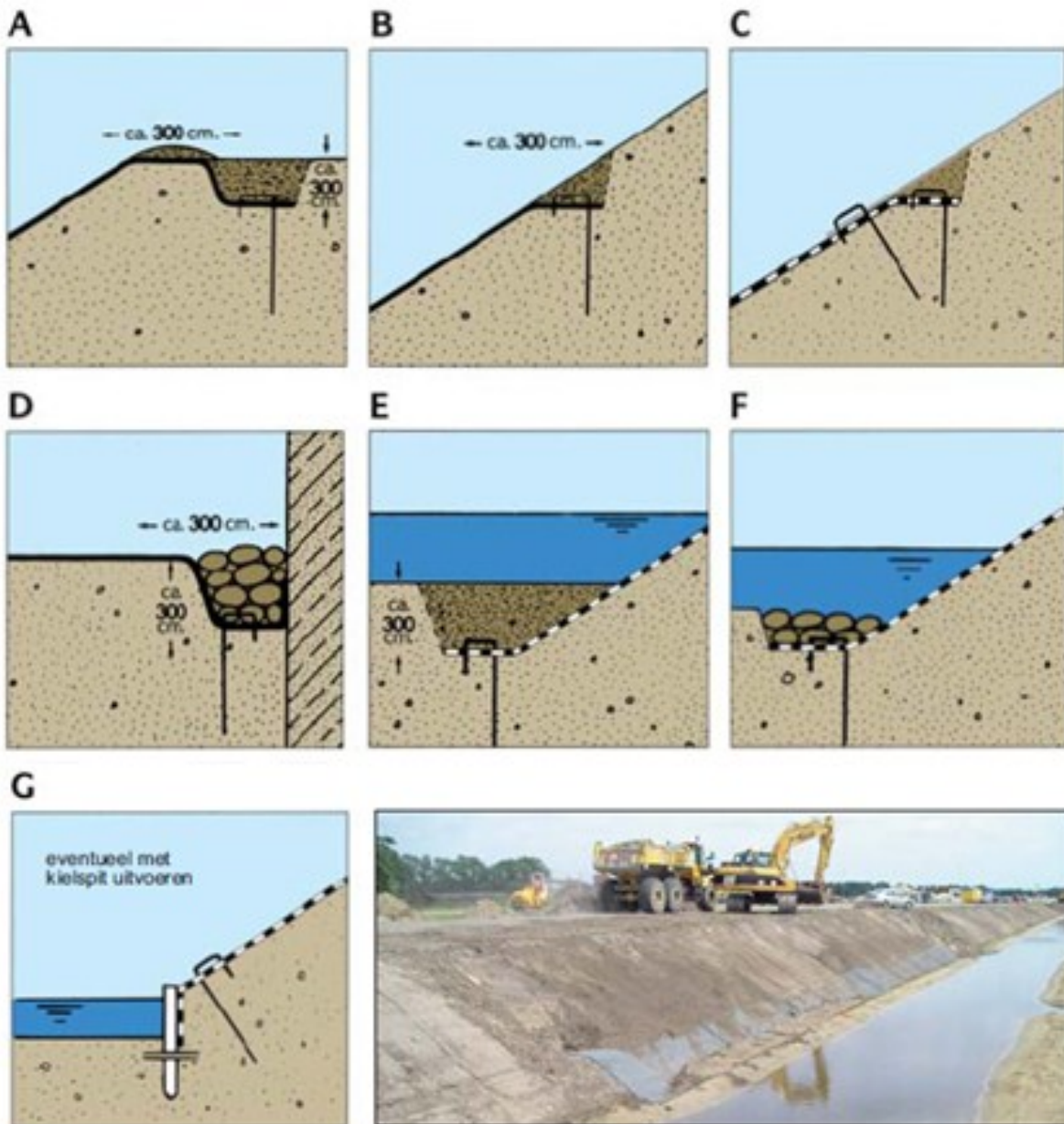
### 10. Enkamat A20 + Enkamat

When Enkamat A20 is used in combination with standard Enkamat, first install Enkamat A20, secure the top edge in a trench at least 500 mm above normal water level, fill and compact, as shown overleaf. Lay standard Enkamat to overlap the backfilled trench, Secure with pins at 250 mm centers and rake in top soil to

give a covering of 10 mm to 20 mm over the Enkamat (detail C).



## Principle anchoring details for Enkamaf and Enkamaf A20



**Note:**

All pins shall be placed parallel to the edges of the matting to assure optimum fixing efficiency (for clarity the pins have been shown above in the other direction).

**Disclaimer:**

All information relating to the present design is of a general nature only.

The details are subject to change without notice. Whilst every effort has been made to ensure its accuracy and correctness, this information should not be used or relied upon for any specific application without independent professional examination and verification of its accuracy, suitability and applicability. The user shall be solely responsible for the selection, use, efficiency and suitability of the information. Anyone making use of the information does so at his or her own risk. To the fullest extent permitted by law, Bonar B.V. or its affiliates decline any liability or indemnification for damages and/or losses in connection with or arising out of the use, the result of use or inability to use the information.