

Installation guidelines

Installation guidelines

- Temporary roads
- Permanent roads
- Embankment on compressible soils
- Vertical drains
- Drainage systems
- Erosion control systems
- Water applications
- Overlapping - Additional surface - Sewing - Welding
- Glueing
- Handling of rolls

Installation Guidelines

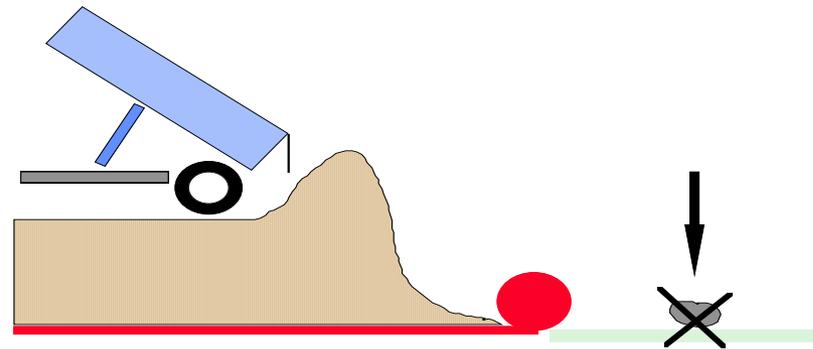
• Temporary- & permanent roads

- Remove all large debris which might puncture the **Typar®**.
- Unroll **Typar®**. **Typar®** should be at least as wide as the base of the aggregate layer.
- If two or more rolls are required, ensure sufficient overlap.
- If it is windy, use shovelfuls of aggregate at regular intervals to hold **Typar®** in place.
- Backdump aggregate without driving on **Typar®**.
- Level and compact aggregate before any heavy traffic occurs.
- Avoid aggregate size in excess of 1/3 of aggregate layer thickness.
- Fill up ruts, if any, as soon as they exceed 1/3 of aggregate thickness. Rutting will then be stopped.
- First aggregate layer must be at least 25 cm thick.

Installation Guidelines

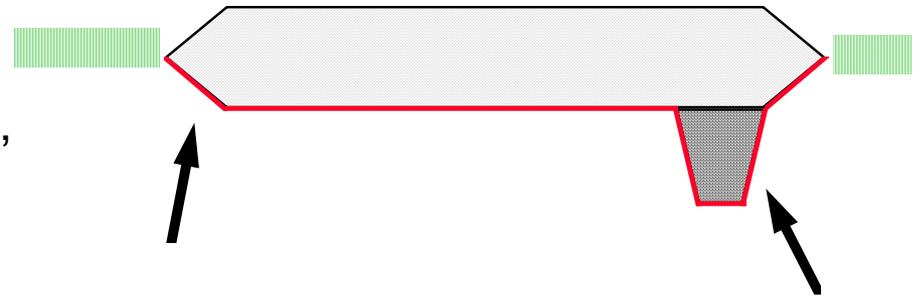
• Temporary Roads with Typar®

- The major functions of **Typar®** for temporary roads are separation and stabilisation. Since the soil/geotextile /aggregate system is going to be deformed by the traffic loads, special attention must be paid to overlap and anchorage.
 - a) Built directly on grass: cf. Temporary- & permanent roads



Installation Guidelines

- **Temporary Roads with Typar®**
- **b) Built after removal of top soil**
 - Level surface (smooth out cuts or irregularities).
 - Provide drainage ditches when needed.
 - Unroll **Typar®**. Choose **Typar®** of sufficient width to have the sheet going up on each side to provide a good anchorage.
 - If two or more lanes are required, ensure sufficient overlap
 - Aggregate installation as indicated above a)



Installation Guidelines

- **Permanent Roads with Typar®**
 - The major function of **Typar®** during a road's life-time is separation.
 - However, during the construction period the first aggregate layer is very often used as a temporary road. In this case **Typar®** also acts as a support membrane and the installation guidelines are similar to those for temporary roads.

Installation Guidelines



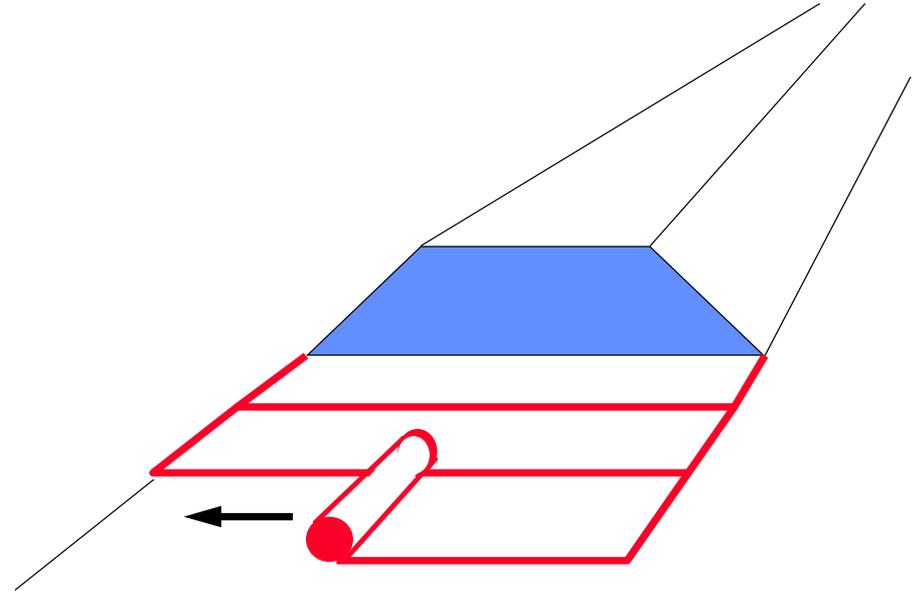
Installation Guidelines

- **Embankments on compressible soil**
 - The geotextile will be stretched considerably during the settlement period. It will also slightly increase the embankment stability by providing a horizontal force.

Installation Guidelines

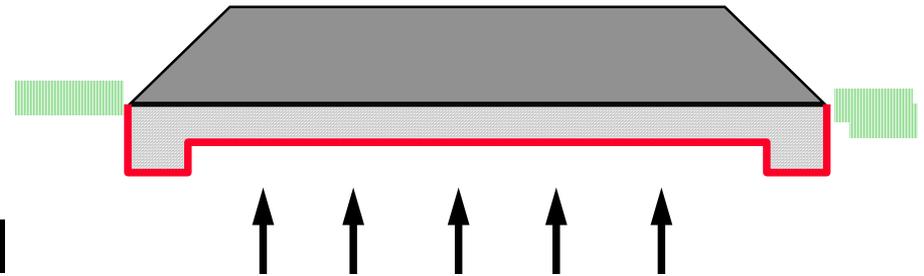
• Embankments on compressible soil

- Level surface.
- Unroll Typar® perpendicularly to the embankment axis in order not to have any discontinuity in the direction of the main effort. Overlap at the end of a roll should be at least 1m.
- It may be advantageous to sew the strips of Typar® together to obtain a continuous sheet parallel to the embankment axis.



Installation Guidelines

- **Embankments on compressible soil**
 - To increase speed of settlement it may be useful to install a layer of sand or gravel acting as a drainage blanket. In this case **Typar®** will act as a filter membrane.

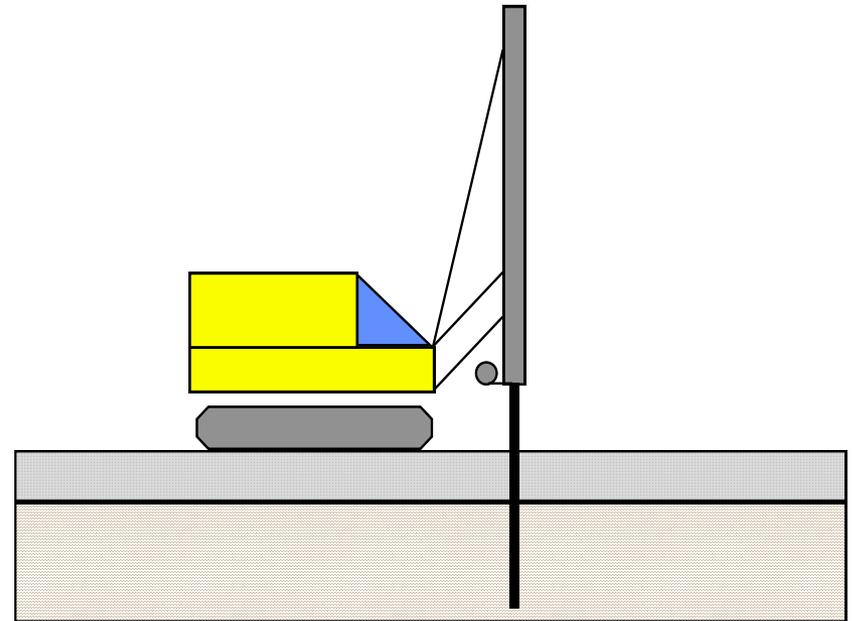


Installation Guidelines

• Vertical drains with Typar®

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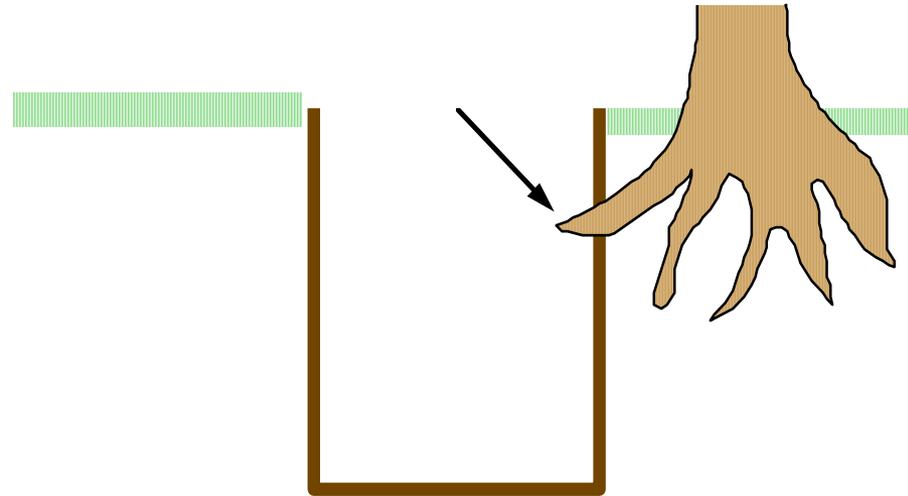
- In some cases vertical drains are required to speed-up the embankment settlement on a soft, saturated soil. To allow installation of vertical drains by heavy engines, it is necessary to install a platform of aggregate on the **Typar®**. The aggregate layer will then also act as a drainage blanket.
- Since **Typar®** is sandwiched between the subsoil and the gravel layer, friction forces are usually sufficient to hold it in place during perforation by vertical drain mandrel.



Installation Guidelines

- **Drainage systems with Typar®**

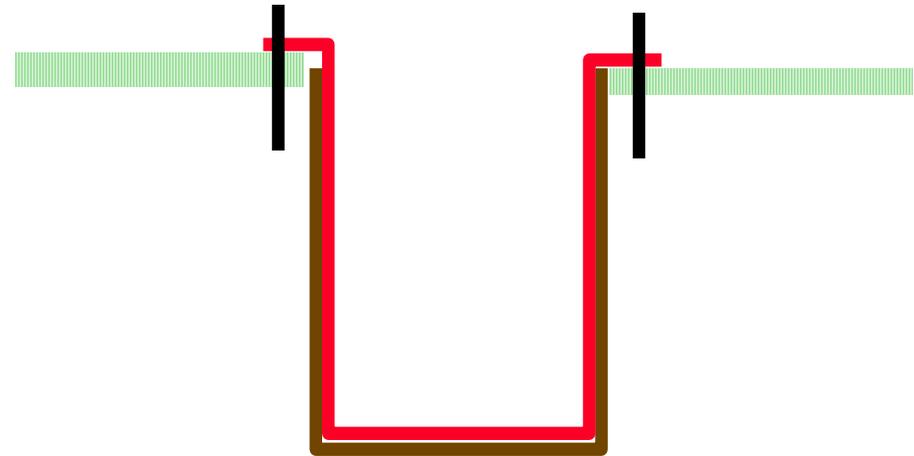
- a) Trenches
 - The base and side walls of the trench should be as free of irregularities as possible (holes, roots, etc..).



Installation Guidelines

• Drainage systems with Typar®

- Lay **Typar®** parallel to the trench and anchor the edges of the fabric.
- Do not drag the fabric in the mud. This will cause a large amount of fine particles to deposit on the surface of **Typar®** and thus to create an impervious film.



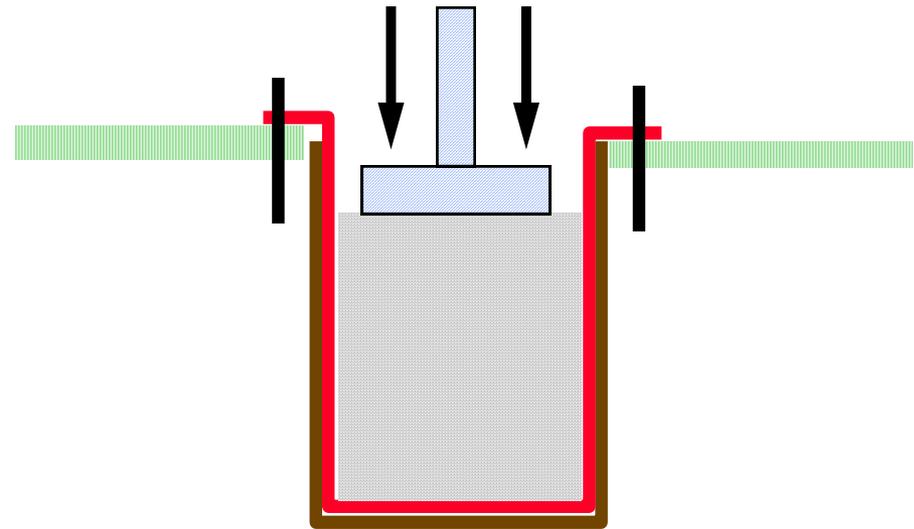
Installation Guidelines



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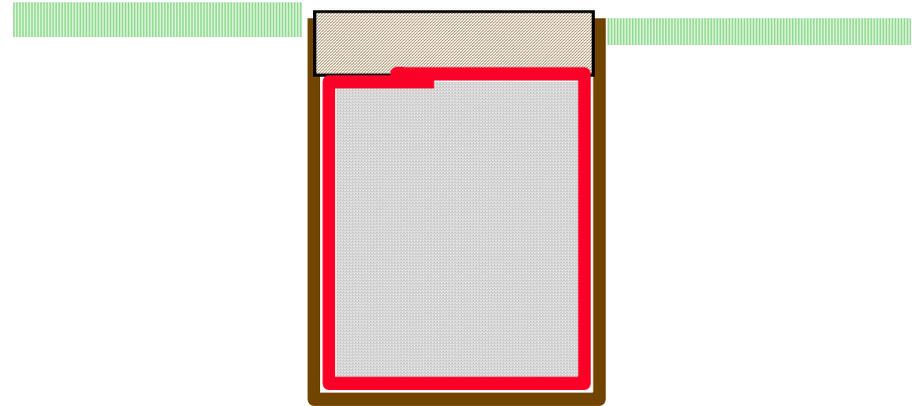
• Drainage systems with Typar®

- Dump the drainage aggregate carefully to avoid all the fabric being dragged towards the bottom of the trench.
- Do not use too large stones to fill up the trench. Max. size 2 cm gravel is required to ensure good fabric-to-soil contact.



Installation Guidelines

- **Drainage systems with Typar®**
 - Compact the aggregate and enclose it with **Typar®** before the backfill is placed on top of the trench.
 - Overlap strips of **Typar®** at least 30 cm (like slates).

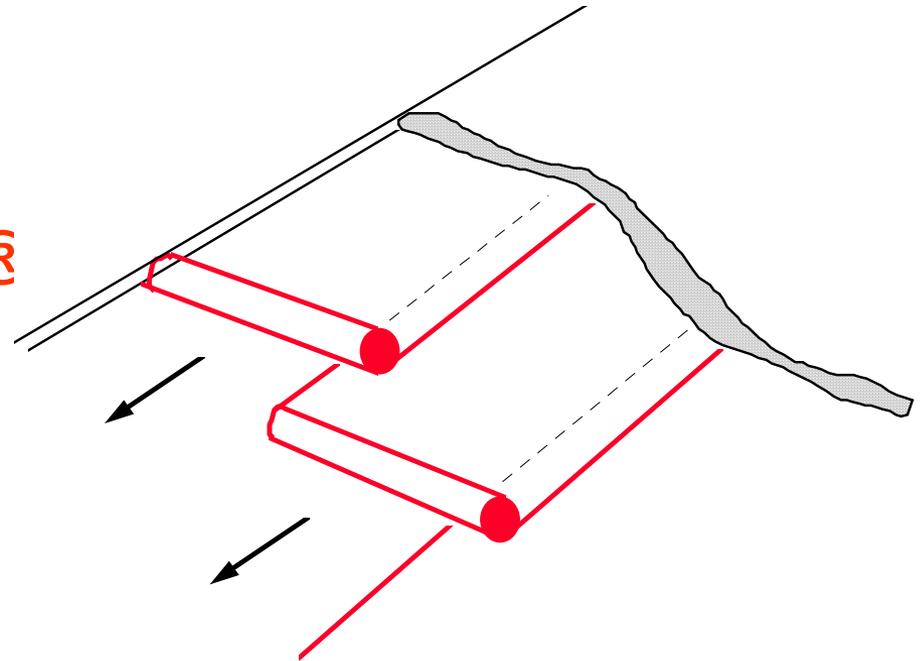


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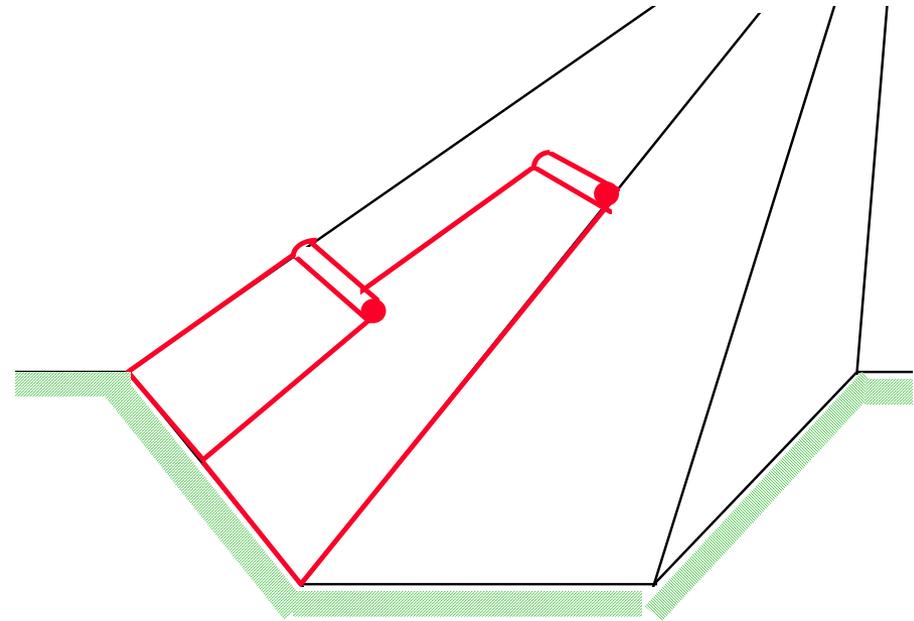
- **Drainage systems with Typar®**
- **b) Blanket drains**
 - Overlap min. 30 cm.
 - Do not unroll **Typar®** too far in advance, especially when it is windy.
 - Use relatively small sized aggregate to ensure good fabric-to-soil contact.



Installation Guidelines

•Erosion control systems with Typar®

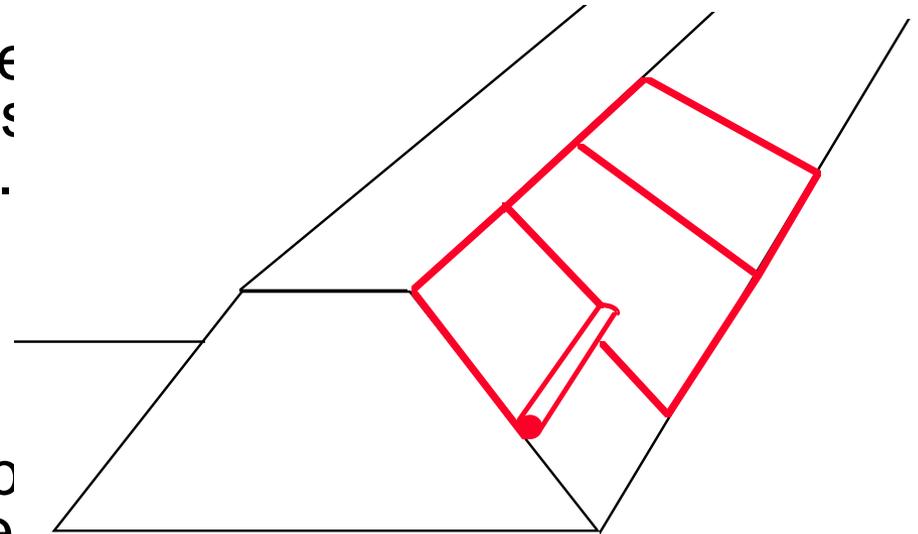
- If possible, grade and compact slopes.
- If slope width is less than 8m, unroll **Typar®** along the length of the lower half of the slope first, then place **Typar®** on upper half of the slope with 0.5 to 1 m overlap.



Installation Guidelines

•Erosion control systems with Typar®

- If slope is over 8 m, place **Typar®** in fullwidth strips from slope top to bottom. Overlap in direction of waterflow (like slates on a roof).
- Excavate ditches for anchoring **Typar®** at top and toe of slope. The toe is the foundation of the structure and should get special attention to prevent undermining.



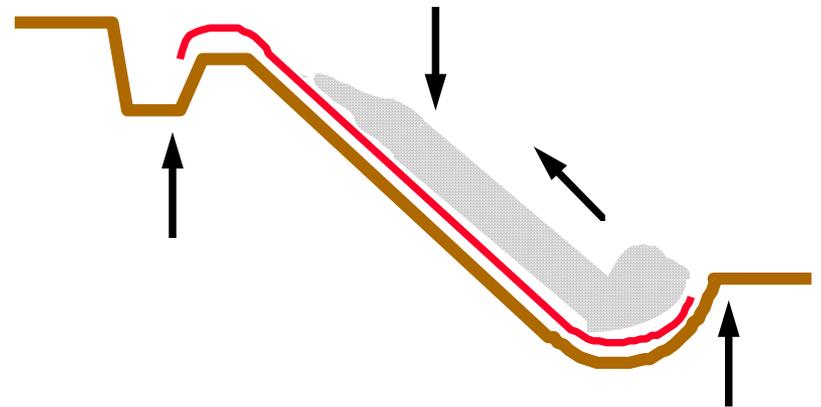
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Installation Guidelines

•Erosion control systems with Typar®

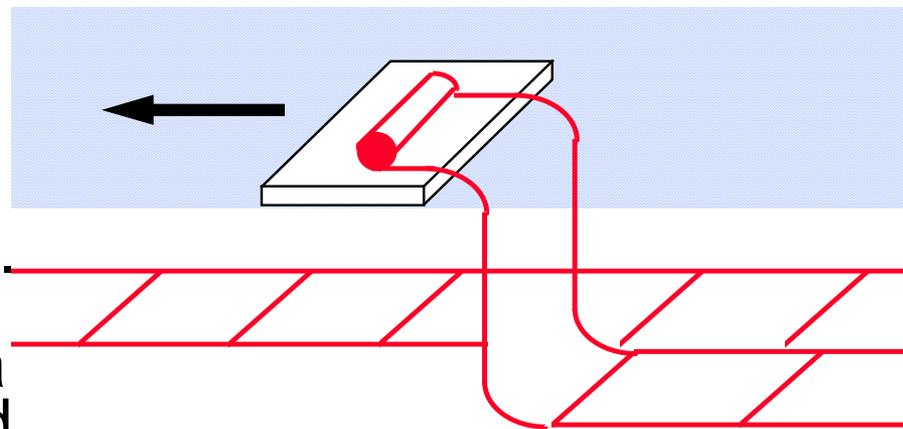
- When placing rip-rap or gabions, start at toe and work up the slope to prevent sliding. Install rip-rap smoothly, without dropping it heavily on to the **Typar®**.
- To ensure good fabric-to-soil contact, first of all place a layer of bedding material (gravel) on the **Typar®**. This layer will prevent the formation of suspended soil and also prevent puncturing by heavy rip-rap.
- Anchor the fabric in the ditch at the top edge of the slope with soil and vegetation. This deep anchoring method will prevent large amounts of surface water from getting under the fabric and lifting the entire structure.



Installation Guidelines

• Water applications

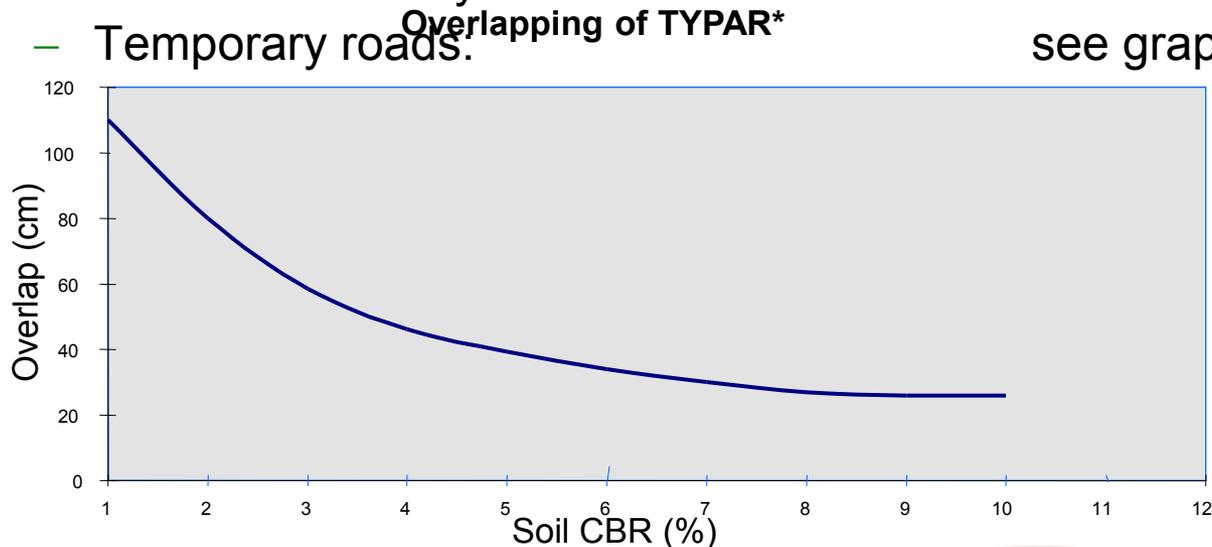
- Polypropylene density being 0.91 sheets of **Typar**® float naturally on water.
- For rapid and regular installation, attach steel rods (as for reinforced concrete, e.g. 6 mm diameter) every 5 metres. These rods will keep the fabric flat, thus allowing a regular overlap. (No need for divers. Smaller overlap = cost savings.)



Installation Guidelines

• Overlapping of Typar ®

- The overlap needed depends on soil properties (CBR), the project nature and on the deformations which might be expected to occur.
- Overlaps normally used:
 - Drainage systems: 30 cm
 - Parking lots, permanent roads: 30 to 50 cm
 - Erosion control systems: 50 to 100 cm
 - Temporary roads: see graph



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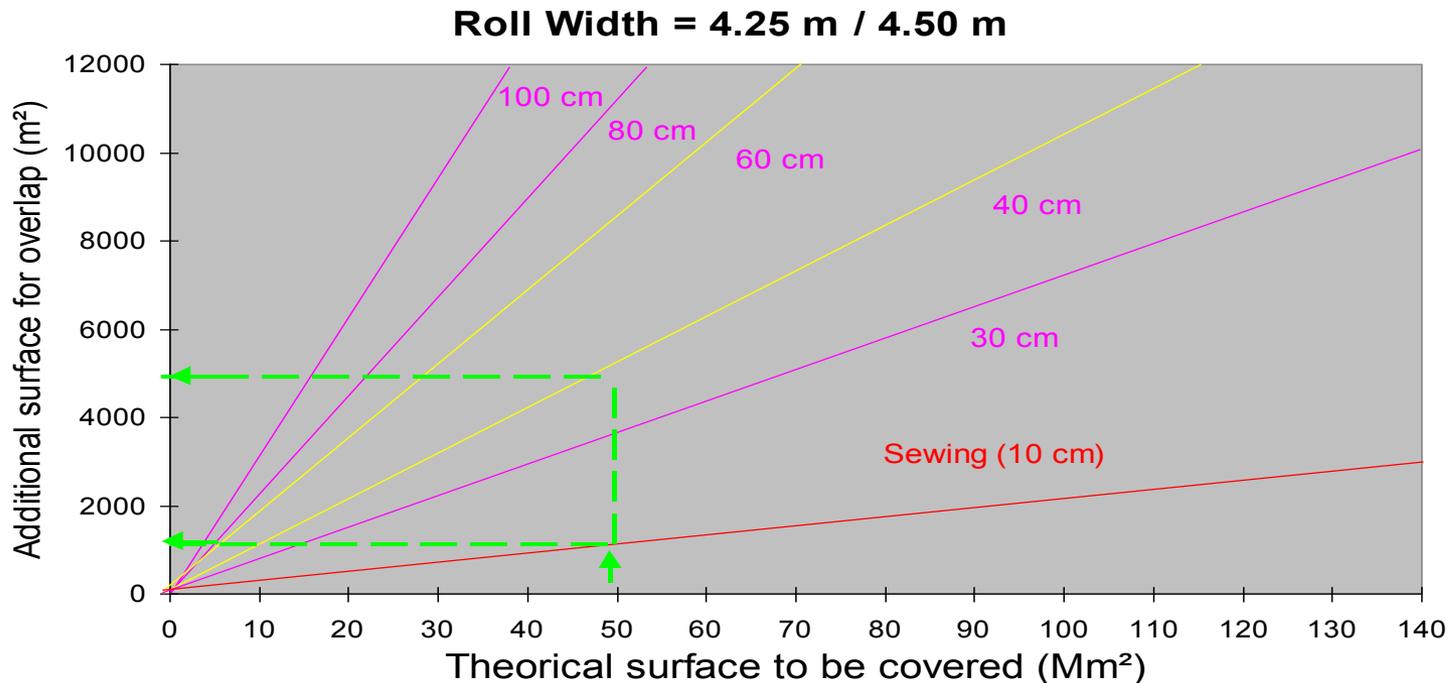


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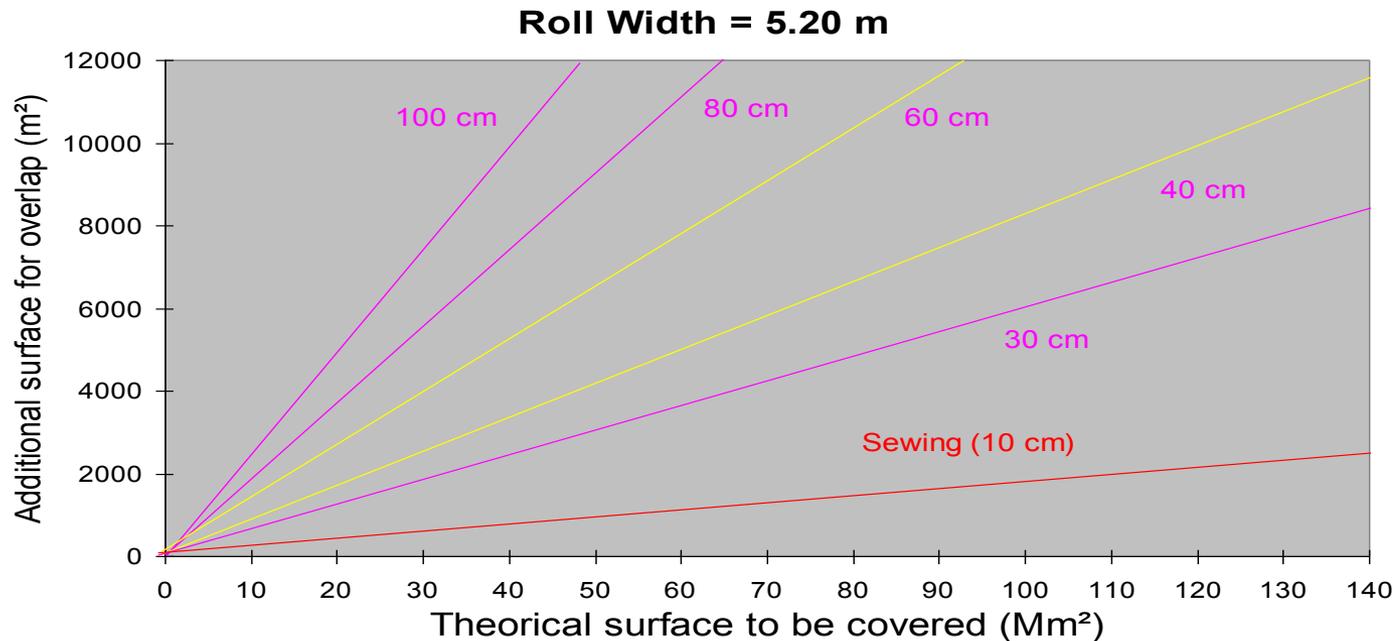
Installation Guidelines

- Additional surface required as a function of overlap width



Installation Guidelines

- Additional surface required as a function of overlap width



Installation Guidelines

• Glueing with Typar ®

- Sheets of Typar ® can be glued together by means of following glues or hotmelts (N.B. This list is not exclusive).

- Eastobond* M336 Eastman Chemicals (UK)Ltd.
- Borden (UK) Ltd. North Baddesley, Southampton. 0703 732131
- Evo-Stick Thermaflo Evode Ltd., Stafford 0785 36161
- Swift* 9 Mo/280 Eschen Gmbh, Essen - D -
Swift* 9 Mo/170
- Ultraflex* 56 Isar - Rakoll Chemie GmbH, München - D -

Installation Guidelines

• Glueing with Typar ®

– Foss-Melt* 61-6915

Sadofoss A.S.
DK - 3480
Fredensborg
Denmark

– Jowat-Metallix* 47610
47620

Jowat K.G.
D - 4930
Detmold

* Registered trademark

- Polyvinyl acetate glues generally perform satisfactorily.
- If you are interested in any of these products please contact the manufacturer for detailed information.

Installation Guidelines

• Handling of rolls

● No Soak

- Thick geotextiles soak up water. When it rains they are difficult to install because of their increased weight. And at freezing temperatures they become impossible to use for they will freeze solid. **Typar®** can be stored outside. It does not soak up water and therefore will not freeze.

● Storage

- **Typar®** rolls take up less space than many other geotextiles, thus storage and transportation are efficient.

● Sawing

- **Typar®** is thin and light. The compact rolls are easy to transport and to install. And you can easily cut a roll to the desired width with a chain saw. This is almost impossible with most other geotextiles.