

Product brochure

ViaCon GeoTechnical Solutions



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Geosynthetics

APPLICATION

- Roads and railway structures
- Embankments
- Airport structures
- Environmental engineering
- Steep slopes
- Car parks
- Hydro engineering structures
- Reinforcement of steep slopes
- Asphalt reinforcement



DESCRIPTION

Geosynthetics are polymer products widely used in many geotechnical and civil engineering projects. Geosynthetics application is very wide.

In order to fulfill different functions in the geotechnical design, ViaCon offers a large number of geosynthetics: non-woven and woven geotextile, geogrids,

erosion control products, geomembranes, GCL, drainage geocomposites as well as the fiberglass grids for asphalt reinforcement. ViaCon provides engineering assistance including from the recommendations of the use of specific material until full design and implementation of engineering facilities.



Nonwoven geotextiles

APPLICATION

- Separation of soft subsoil under road and railway embankments
- Increasing road structure stability
- Separating layer between soils or fill layers with a different aggregate size
- River banks protection, embankments and water reservoirs construction
- Vertical and horizontal geosynthetic drains
- Drainage systems protection
- Cracks preventing layer under concrete pavements
- Geomembranes protection against installation damages when building landfills, tunnels and water reservoirs



DESCRIPTION

Products are made of polypropylene or polyester fibres mechanically joined in the process of needle punching and thermal bonding. They are generally used in the road and railway construction, hydro engineering, ground improvement, forestry and agriculture.



Woven polypropylene geotextiles



APPLICATION

- Reinforcement and separation of low-bearing soils
- Separation layer between soil and subbase layer
- Roads and railroads
- Soil reinforcement
- Geotubes

DESCRIPTION

Woven geotextiles are made of high-quality polypropylene strips with tensile strength 20 kN/m to 110 kN/m. These products are resistant to mechanical damage, UV radiation and chemical and biological corrosion.

Woven polyester geotextile

APPLICATION

- Construction of roads and railways
- Construction of storage yards, car parks
- Construction of levees, wharfs
- Reinforcement of retaining walls and construction of high embankments
- Construction of river banks and water reservoirs
- Mining damaged areas



DESCRIPTION

Woven geotextiles are made of polyester multifilament yarn with a high tensile strength (up to 1500 kN/m) and an elongation from 10 to 15%. Polyester woven textiles expected service life is up to 120 years.

They are perfect for reinforcement of subsoil, separation, and construction of high embankments. They are resistant against mechanical damage, and they have high durability, low elongation and high tensile strength.



Laid geogrids

APPLICATION

- Construction of steep slopes of road and railway embankments
- Slope failures repair
- Construction of retaining walls
- Embankment extension works
- Landfill embankments



DESCRIPTION

Laid geogrids are produced by welding PP or PES extruded strips. They are applicable for reinforcement of base course of roads and steep slopes of

embankments.

They are also used for construction of retaining walls with different facing systems. Their expected service life is up to 120 years and they are resistant to chemical and biological corrosion. Laid geogrids have very low elongation at nominal strength and they are very suitable for base reinforcement.



Polypropylene extruded geogrids

APPLICATION

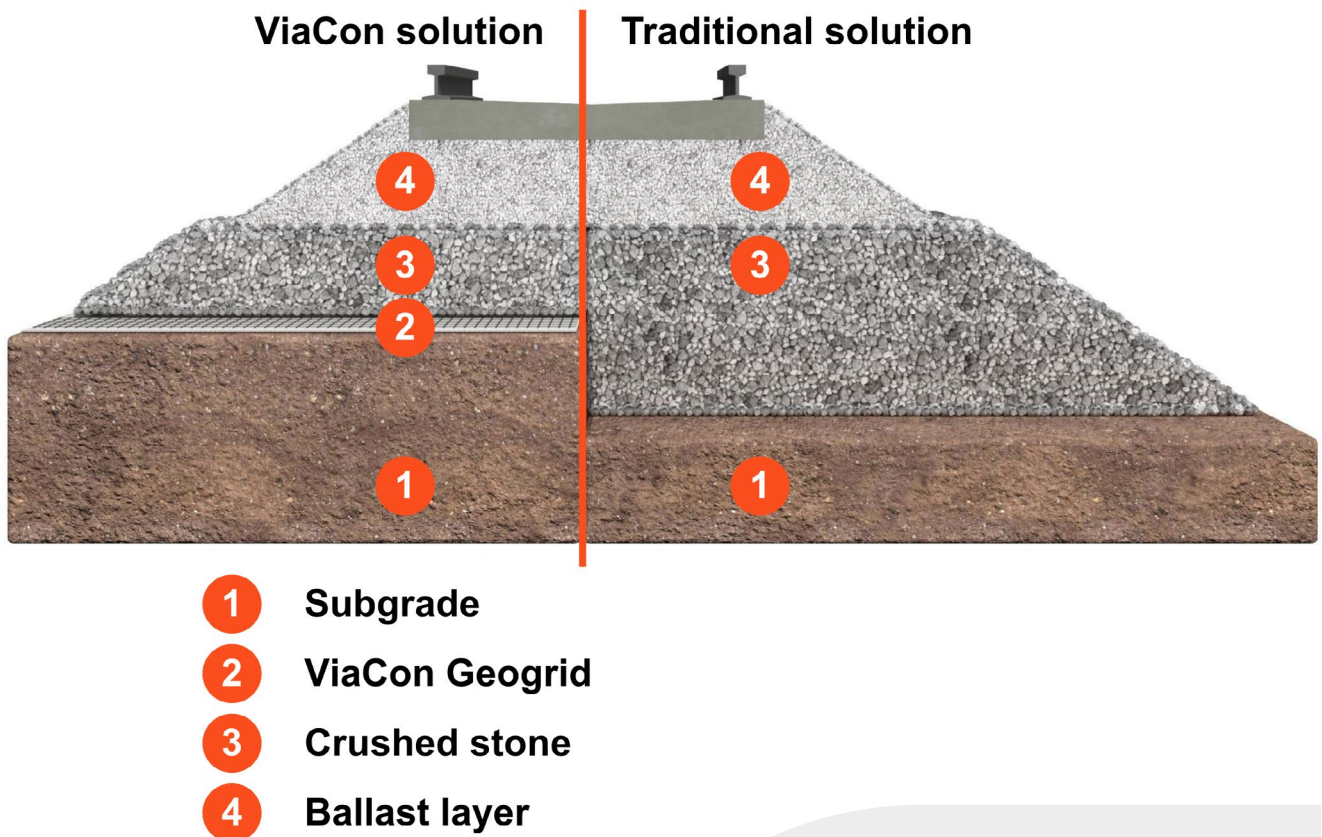
- Construction of roads, streets, railway lines, tramways, forest roads
- Construction of airports, storage yards and car parks
- Construction of embankments on soft soils
- Reinforcement of subsoil under foundations



DESCRIPTION

Biaxial geogrids are made of polypropylene during process of extrusion. They are characterized by a tensile strength from 15 to 50 kN/m.

They guarantee a significant increase of ground bearing capacity. When using geogrids aggregate consolidation is more effective. Load is distributed to higher areas and deformations are reduced.



Woven polyester geogrids

APPLICATION

- Reinforcing soft subsoil of embankments and banks
- Construction of yards, car parks, temporary and forest roads
- Reinforcement of the upper layer of the subsoil of roads and railways
- Reinforced embankments, retaining structures and walls.

DESCRIPTION

Polyester woven geogrids are polymer coated. That is additional protection against UV. Their expected service life is up to 120 years. They can be produced with over 1500 kN/m tensile strength and elongation at break 10-12%.



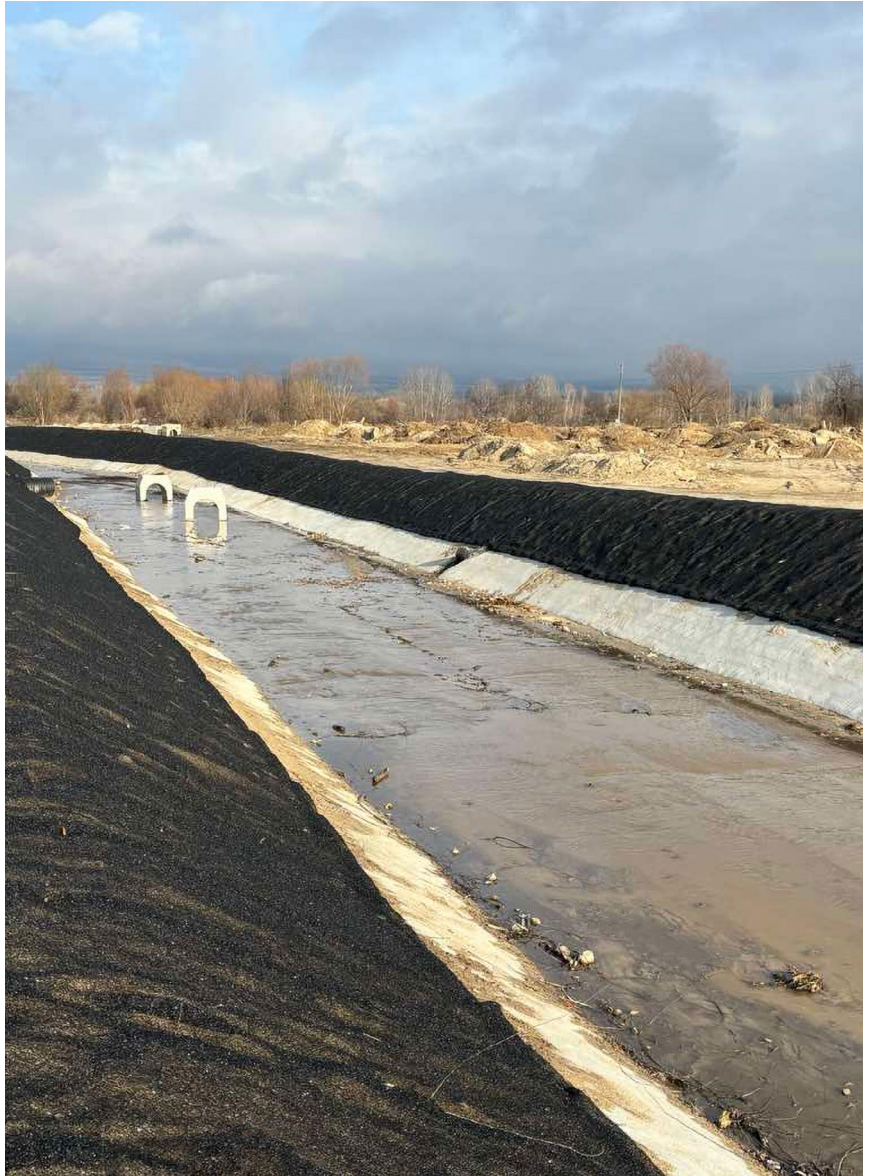
Erosion control geomats

APPLICATION

- Slopes to be covered with vegetation
- Slopes of trenches and canals
- Banks of canals, ponds and artificial reservoirs, as well as covering for landfills
- Rock-fall protection

DESCRIPTION

Erosion control geomats are made of polypropylene or polyethylene fibers. They are used for protection against the degrading impact of rain, drain water, wind and waves. Erosion control geomats can be reinforced with geogrid to bear forces from top soil layers.



Biodegradable erosion control products

APPLICATION

- Roadside Construction
- Riverbank Stabilization
- Post-Fire Restoration
- Wetland Restoration
- Residential Landscaping



DESCRIPTION

Erosion control mats are made of natural biodegradable fibres. They are produced from straw, coir and jute. They are used for protection of slopes of an angle up to 70°. Erosion control mats prevent slope degradation and

ensure vegetation of plants during their initial rooting. Embankments and river banks secured with the biomats ensure protection of the slope face against wind and storm water runoff.



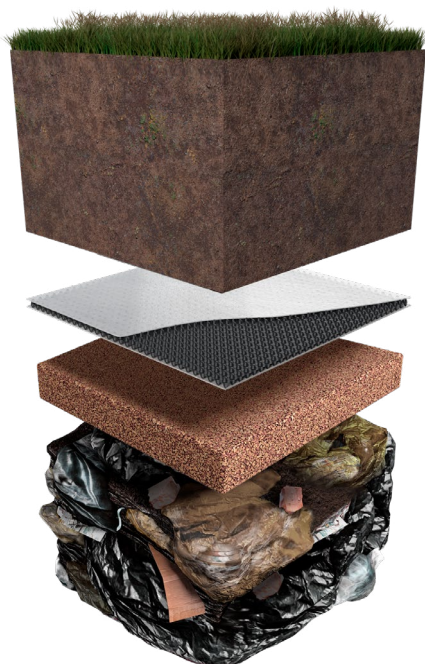
Drainage geocomposites

APPLICATION

- Drainage of runways, roads and railways
- Drainage of car parks and storage yards
- Construction and remediation of landfills
- Gas discharge and landfills drainage
- Drainage of bridge abutments and walls

DESCRIPTION

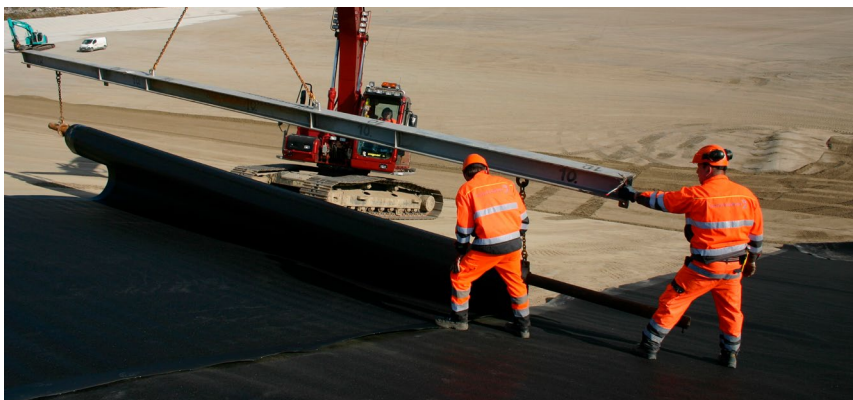
Drainage geocomposites are made of HDPE or polypropylene core laminated with nonwoven geotextile on one or both sides.. Geocomposites are characterized by a low compressibility and allow discharging very large amounts of water at a high load. This is the most efficient surface drainage system. Drainage geocomposite is very durable and resistant to silting up.



Geomembranes

APPLICATION

- Construction of landfill capping and waste dumps
- Construction of canals, levees and artificial water reservoirs
- Reinforced concrete and steel tanks sealing
- Hazardous substance handling yards and fuel stations sealing
- Mining construction and tailing ponds
- Construction of irrigation ducts and ditches
- Artificial ponds



DESCRIPTION

Geomembranes are watertight materials made of HDPE, LDPE, EPDM, PP and PVC. They are produced in rolls with the width of 5.0 - 11.0 m and the thickness of 0.5 mm - 3.0 mm. They are joined by thermal bonding or welding and always provide tight and durable

connection. Geomembranes are resistant to UV radiation, chemical and biological corrosion, acids and alkali. Geomembrane surfaces can be one-sided or double-sided textured which leads to higher angle of friction with adjacent layers.



Bentonite waterproofing

APPLICATION

- Construction and remediation (cappings) of landfills
- Underground waterproofing of buildings and facilities
- Applicable to the construction of roads passing through green areas
- Construction of ponds and artificial lakes
- Construction and reconstruction of dams
- Construction of irrigation ducts and ditches
- Construction of tunnels



DESCRIPTION

Bentonite waterproofing (Geosynthetic Clay Liners – GCL's) is a three-component system of two layers of polypropylene geotextile, between which sodium bentonite is encapsulated by needle punching technology. Bentonite is a clay with a high content of the mineral montmorillonite, which has the property to swell up to 15 times when contacted with water.

Placed between two non-deformable and well-compacted layers, bentonite geomembrane creates a waterproof clay hydro insulation layer and has high waterproofing properties.

The installation of bentonite waterproofing is quick and easy and is carried out by overlapping the individual rolls. The width of the material depends on its purpose, ranging from 1.15 to 3 m in the waterproofing of the basements part of buildings and up to 5.1 m in the construction and remediations of landfills, and the length is determined according to the needs of the site. GCL's are produced from woven and non-woven geotextile and can be produced with polyethylene geomembrane of different thicknesses if necessary. The amount of bentonite used in the production of the GCL varies widely and depends mainly on the purpose of the material and the regulatory requirements.



Cement geomembranes

APPLICATION

- Lining and repair of channels and earth ditches
- Lining of protective embankments
- Protection of transport pipelines from weeds
- Lining of corrugated steel structures
- Protection and laying of a base with a strength of 40 mpa for open terrains and indoor floors



DESCRIPTION

Cement membranes are a three-component system of two layers of non-woven polypropylene geotextile with an in-between layer of dry cement encapsulated by needle compaction technology. Concrete filled geosynthetic

material which hardens upon hydration and forms a thin, durable, waterproof and fireproof concrete layer with a 1-2 cm thickness. The cement membrane is a concrete lining material delivered in rolls.



Geocell

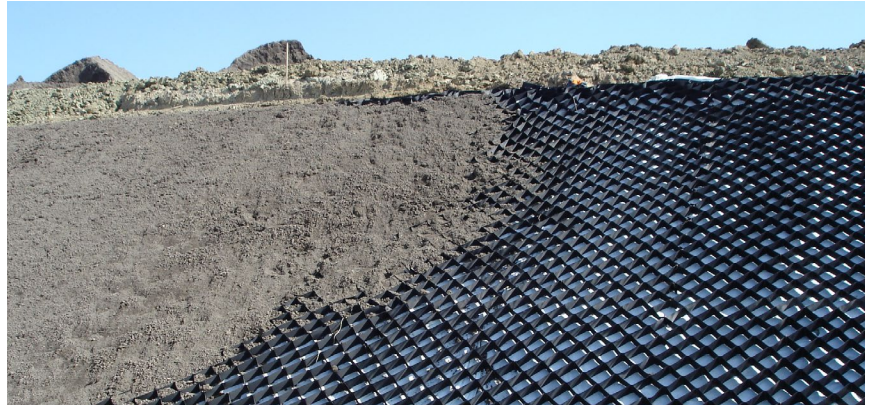
APPLICATION

- Construction and rehabilitation of temporary and permanent roads
- Construction and rehabilitation of railway infrastructure
- Construction and remediation of landfills
- Control of slope erosion
- Construction of retaining walls
- Reinforcement of low-bearing subgrade
- Construction of canals
- Reinforcement of industrial floors

DESCRIPTION

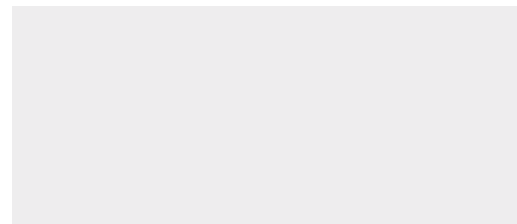
Geocells are a system made of structured strips of high-density polyethylene (HDPE) connected by ultrasonic welding. In the stretched state, the geocell acquires a rhomboid shape, which will be filled with a suitable material - sand, gravel, concrete or humus.

The height of the geocells varies between 5 cm and 30 cm, and the size of the cells reaches 400 x 520 mm or more.



Geocells are produced in sections with sizes depending on the size of the cells and their application. The connection of the sections is done by cable ties and they are stretched by steel anchors with diameter and length, depending on the type of the subgrade, the size of the geocells and their application. For sloping terrain or in cases where it is not appropriate using anchors, installation may be accomplished by polymer or steel ropes anchored at the upper end of the slope.

For slope applications the geocells must be perforated to drain infiltration water. Often a woven or non-woven geotextile is installed under the geocells, which prevents the material in the geocell from mixing with the subgrade and at the same time it contributes for increasing the bearing capacity of the system.



Asphalt reinforcement geogrid

APPLICATION

- Prevention of reflective cracking
- Reinforcement of asphalt layers, e.g. areas with heavy load traffic (airports, car parks)
- Reinforcement of connections between two different structures or new and old structures
- Ruts prevention
- Reinforcement of connections when widening roads



DESCRIPTION

Fiberglass geogrids and fiberglass geocomposites are produced from glass fibers knitted in a bioriented structure and bituminous or polymer coated. In the geocomposites, glass fibre grid is bonded with non-woven

polypropylene geotextile. Geogrids are characterized by low elongation (up to 3%) and a high tensile strength (up to 200 kN/m). They are resistant to very high temperatures.



MSE walls

APPLICATION

Retaining walls are applied in various infrastructure projects, roads and bridge facilities. They are successfully utilized in strengthening slopes and the support of bridges and viaducts.

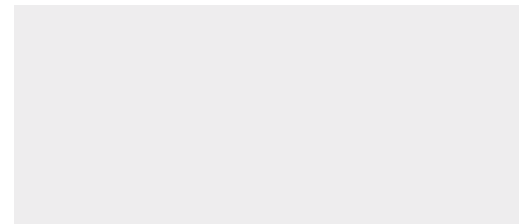
DESCRIPTION

ViaCon offers wide range of retaining walls with different types of facing elements including gabions, concrete blocks and panels, wrap around systems, green facing. Reinforcement material is typically geogrids, geosynthetic belts or steel nets. The system is known as Mechanically Stabilized Earth or MSE walls.

When the reinforcement material is connected to the facing elements the system is active. MSE wall with wrap-around geogrids is a passive system achieved by wrap-around of geogrid itself, and thus avoiding redistribution of forces from the MSE body to the facing elements.



This also allows independent construction of the MSE wall and the facade wall. This system is also applicable for MSE abutments, in a cases where the bridge beam steps directly on the MSE wall.



Gabions

Gabions are factory-produced modules of double twisted hexagonal mesh or electrical welded wire with different diameters and mesh sizes. Inside the gabions are filled with crushed stone or gravel conforming to mesh size.

Installation is easy and rapid, as the gabions arrive folded on the jobsite. When assembling, rings, spirals, or wire coated with anti-corrosion coating are used.

During assembly process of each gabion, fasteners are used to limit the deformations, if the length of the gabions, exceeds 1.5 m, intermediate diaphragms are used, included in the kit.



GABION MATTRESSES

Gabion mattresses are large gabions with height up to 30 cm. They are used for channel construction, correction of rivers and erosion control on slopes.

Their assembly is carried out in a similar way to that of gabions.

GABION SACKS

Gabion sacks are made of double twisted hexagonal mesh rotated around cylindrical surface. Filled in aside from the jobsite, then assembled on riverbank or seashores with light equipment for

constructing dykes, breakwaters and erosion protection. Extremely suitable for emergency works and short deadlines because of their quick assembly.





ANTI-CORROSION COATING

Depending on how aggressive the environment is and the service life of the facilities, gabions, mattresses and sacks can be delivered with several types of anti-corrosion coating:

- Zinc coating (Zn)
- Zinc and Aluminum coating (Zn-Al)
- Combination of zinc, aluminum and PVC (Zn-Al-PVC)
- Stainless steel gabions in highly aggressive environments

APPLICATIONS

- Correction of rivers
- Retaining walls
- Protection of slopes against erosion
- Riverbanks and seashores
- Construction of channels and hydro-technical facilities
- Building hydraulic thresholds
- Reinforcement of landslides and others



Geosynthetics installation

STAGE 1: PREPARATION OF THE SUBSOIL

Geosynthetic should be placed on smooth subsoil. All protruding roots and large sharp stones sticking out which might cause damage to the material during its installation should be removed.



STAGE 2: INSTALLATION OF GEOSYNTHETICS

The direction of laying the geosynthetics should be in accordance with the technical design and installation guide. The longitudinal and transverse overlap must not be less than 0.1 m. Its value should be selected depending on the bearing capacity of the subsoil expressed by CBR.

Geomembranes, where the connection should be tight, thermal bonding and welding are used. Uniaxial geogrids for reinforcement of high embankments can be joined with one another with bodkin connections.

Geosynthetics can be anchored with the use of steel pins or U shaped wire.



STAGE 3: BACKFILLING AND COMPACTING

The aggregate should be laid in layers with a thickness of 0.3 m. It should be remembered that the equipment used in the process should not move directly on the geosynthetic – the minimum thickness of the aggregate layer, on which the equipment can move, should be 0.20 m.

When using geogrids it is very important to comply with the specific parameters of the aggregate (fraction of the aggregate, with which the geogrid must be

covered up). Proper installation of geosynthetic materials guarantee proper behavior of such materials and the engineering the structure, in which they are installed.

Apart from a wide range of geosynthetic materials, ViaCon offers also full installation service at the construction site starting from geomembrane welding at petrol stations or water tanks and landfills, including installation of all type of geosynthetic materials.



Installation of asphalt reinforcement geogrid

STAGE 1: PREPARATION OF THE SUBGRADE BEFORE LAYING THE GEOGRID

It is recommended to spread the geogrid between two bituminous layers.

The subgrade on which the geogrid will be laid should be:

- As smooth as possible, dry and clean, with cracks and potholes filled and compacted.
- An asphalt leveling layer is recommended over milled surfaces with a profile greater than 2 cm and on uneven surfaces.
- Irregularities of >10 mm should be levelled with bituminous mass before laying the grid.



STAGE 2: APPLICATION OF EMULSION – ADHESIVE LAYER

A layer of polymer bituminous emulsion is applied to the previously prepared surface. Ensure even spraying.





STAGE 3: LAYING THE GRID

After emulsion breaking, it is possible to start installation of the asphalt reinforcement geogrid.

When unrolling the geogrid, special care should be taken to ensure that the surface of the asphalt reinforcement is even, without folds and wrinkles. The geogrid can be laid manually or mechanically.

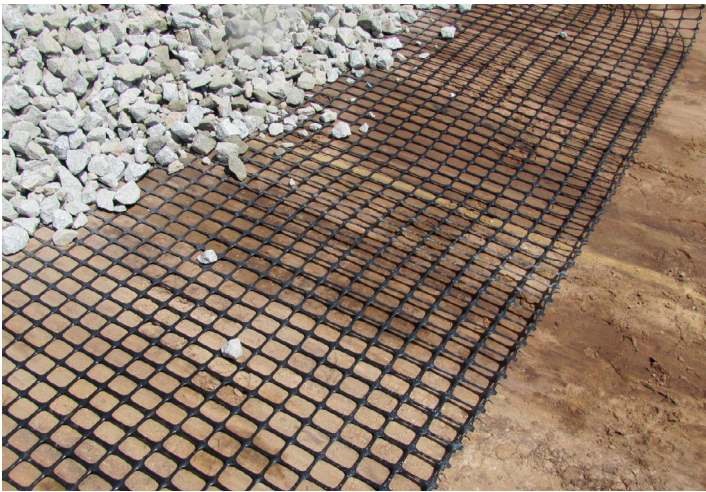
Before starting to unroll the grid, the initial edge of the grid should be fixed with appropriate mounting nails with washers to ensure proper adhesion of the geogrid to the subgrade. When manually unrolling the roll, each layer of the the geogrid must be stretched as much as possible.



Overlaps to be made when laying the grid should be about 15-20 cm regarding longitudinal overlaps, and about 25-30 cm regarding transversal overlaps. Transversal overlaps should be made in the direction of the asphalt mass distribution.

The geogrid should not be placed directly by the kerb and the edge line of the road. The distance between the geogrid and the kerb and road edge should not exceed 30 cm (not less than 5 cm). It is recommended to lay the geogrid with shorter and possibly narrower bands on turns.

It is not recommended to drive vehicles directly on geosynthetics. If this is not possible, avoid sudden braking and sharp turns, as this may damage the material.





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Consciously.**

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ViaCon is a leader in infrastructure construction solutions. Built on strong Nordic roots, ViaCon embodies a practical, human perspective that brings together technology and verifiable sustainability. The long-term view defines our vision, and by driving smart, future-friendly construction solutions for bridges and culverts, geotechnical and stormwater solutions, we will continue to shape and lead our industry.

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