



Installation instructions

MULTIGRAVEL geogrids

GEOGRID SYSTEM WITH STONE INFILL

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GENERAL INFORMATION

NATAN PLAST geogrids form an ecological surface stabilisation system designed to create trafficable surfaces for vehicular and pedestrian use while maintaining a biologically active surface. This solution provides a modern, environmentally friendly alternative to conventional paved surfaces, such as block paving. The product is intended for the construction of roads, driveways, car parks, access routes and other areas requiring durable ground reinforcement. Their design enables the geogrids to stabilise the ground effectively while preserving the natural characteristics of the site, including water permeability and the biologically active character of the surface.

The geogrids are manufactured from a carefully selected PP/PE blend made from 100% recycled material. The material provides high load-bearing capacity and flexibility, resulting in durability and resistance to damage in service. The carefully selected raw material minimises the risk of cracking and improves product reliability in day-to-day use. The system consists of modular elements which, once connected, form a stable and durable pavement suitable for a wide range of applications. Depending on the model selected and the anticipated loads, the system can be adapted to a range of service conditions. This enables the most appropriate system to be selected for the specific requirements of each project and allows a durable, functional and environmentally friendly pavement to be constructed.

LAYING PROCESS

CONNECTING THE GEOGRIDS

MULTIGRAVEL geogrids are connected using purpose-designed loop connectors incorporated into the edges of the modules. The individual modules are designed to form a secure and stable connection when one module is fitted over the other and pressed into place. To connect the modules correctly, place each successive geogrid over the loop connectors of the adjacent module, then press it down until fully seated. Once correctly connected, the modules form a continuous pavement system, ensuring stability across the entire surface. Where modules need to be cut to fit at the edges, an appropriate expansion gap must be left to allow the pavement to accommodate movement correctly.

- The geogrids are connected using loop connectors located along the edges of the modules.
- Place each successive geogrid over the loop connectors of the adjacent module and press it down until fully seated.
- Once correctly connected, the modules form a continuous, stable surface.
- When connecting the modules, ensure that they fit together as closely as possible.
- Where modules are cut to fit at the edges, leave an expansion gap of 3–5 cm.
- Once connected, the geogrids should be infilled immediately so that all geogrid clusters are completely filled and stabilised.

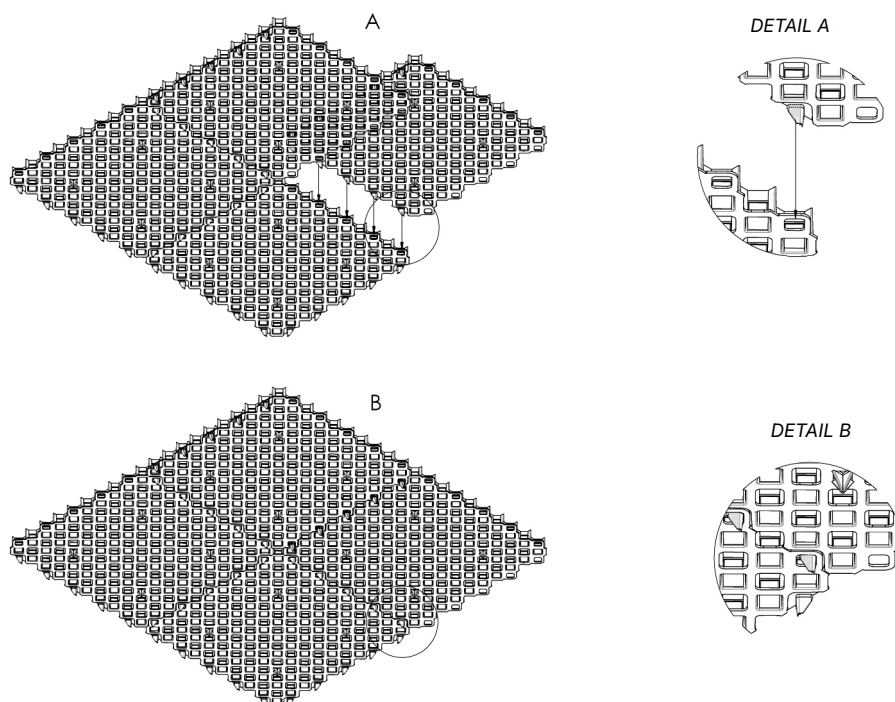


Figure 1 Connecting the geogrids

LAYING THE GEOGRIDS

MULTIGRAVEL geogrids must be laid systematically, maintaining a single installation direction across the entire area. Start at a corner and continue laying the geogrids in rows to maintain the alignment of the pavement and facilitate the connection of successive modules. During installation, ensure that the loop connectors face the direction in which the next modules are to be laid. This will ensure an orderly installation process and the correct fit of the system as a whole. Where the pavement must be fitted against edging units or at terminations, modules may be cut to size, provided that the required expansion gap is maintained along the edges. Once laid, the geogrid pavement must be infilled with aggregate immediately to ensure its stability and satisfactory performance in service.

- Start laying the geogrids at a corner of the area.
- Lay the geogrids in rows, maintaining a consistent installation direction across the entire area.
- During laying, check the orientation of the modules to ensure that the loop connectors face the direction in which the next geogrids will be laid.
- Keep each row straight and ensure that the modules fit together correctly.
- Modules may be cut to fit at the edges.
- Leave an expansion gap of 3–5 cm at the edges.
- During installation, it is recommended that modules from different pallets be mixed to reduce the visibility of any dimensional and colour variations arising from slight differences between production batches.
- The geogrids must only be laid when the ambient temperature is above 10 °C.
- Once laid, the geogrid pavement should be flush with adjacent surfaces.
- Immediately after laying, infill the geogrids with aggregate; all geogrid clusters should be completely filled.
- During installation, lightly compact the infill and fill any remaining voids between the walls.

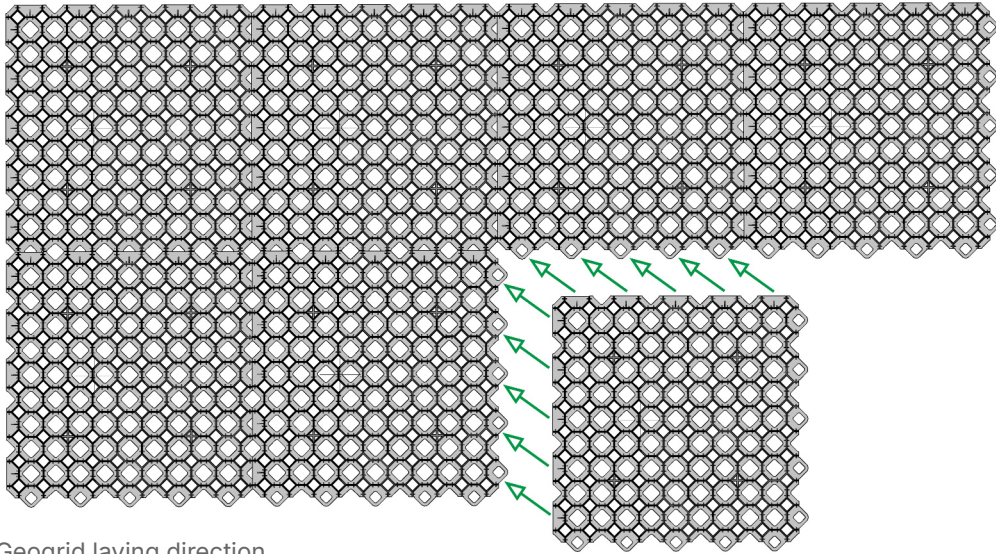


Figure 2 Geogrid laying direction

EXPANSION GAPS

When constructing a MULTIGRAVEL geogrid pavement, provision must be made for appropriate expansion gaps and installation gaps. This is due to the properties of the polymer, which may undergo dimensional changes or slight deformation in response to changes in temperature. Correctly designed and formed expansion gaps reduce the risk of pavement buckling, module movement and stresses developing where the pavement abuts fixed elements. Particular attention must be paid to pavement terminations and to locations where the pavement abuts edging units, kerbs and other permanent site features. For larger areas, intermediate expansion joints are also recommended.

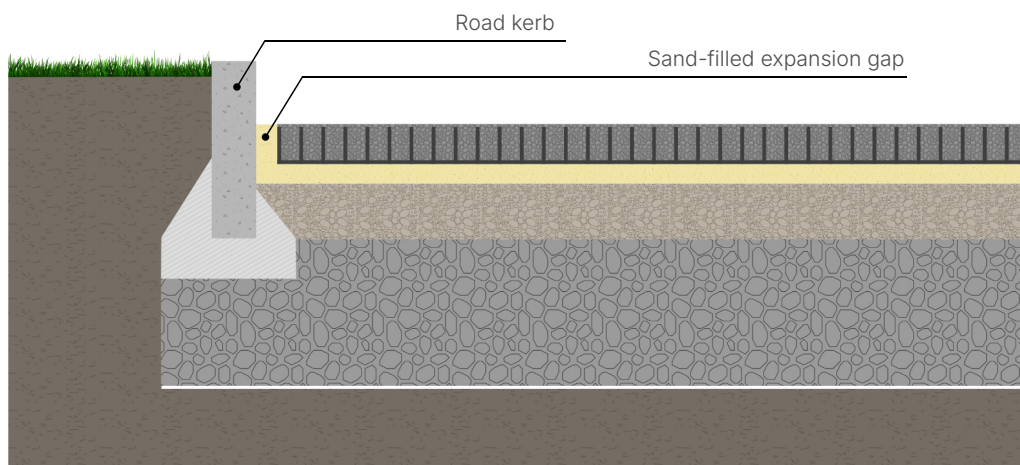


Figure 3 Expansion gap at a kerb

- Minor installation gaps may occur between modules.
- An expansion gap of 3–5 cm must be left at the edges of the pavement and adjacent to fixed elements.
- Where modules are cut to fit at edging units or pavement terminations, the required expansion gap must be maintained.
- Because of the polymer's thermal expansion, a clearance should be maintained between the pavement and fixed elements.
- For large areas, intermediate expansion joints at intervals of approximately 15 m are recommended to reduce the risk of pavement buckling in response to changes in temperature.
- The geogrid pavement should be flush with adjacent surfaces while maintaining the required clearances from edge restraints.
- To ensure the stability of larger paved areas, suitable edge restraints are recommended.

SUB-BASE

The sub-base beneath the geogrid pavement should be constructed so as to ensure the durability, stability and safe use of the pavement system as a whole. Its design must be tailored in each case to the intended use of the pavement, the anticipated loads and the ground and groundwater conditions at the installation site. A correctly constructed sub-base should provide uniform support for the geogrids, reduce the risk of rutting, settlement and pavement movement, and allow effective drainage or infiltration of water.

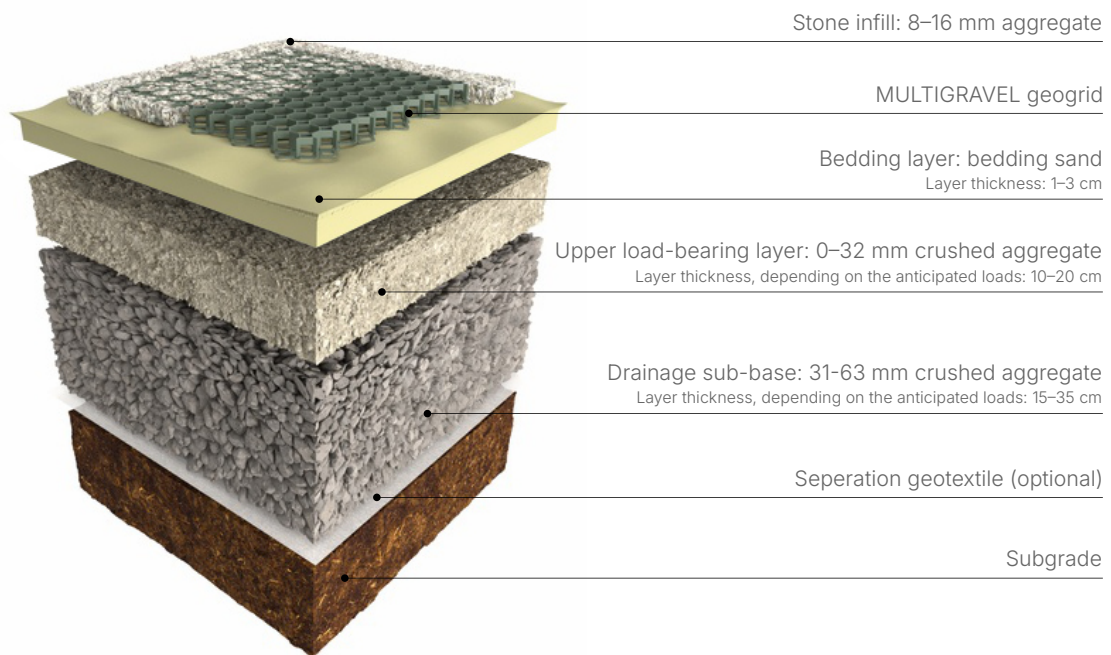


Figure 4 Suggested sub-base build-up

- The sub-base must be designed for each application to suit the pavement type, anticipated loads, traffic intensity and the ground and groundwater conditions at the site.
- The subgrade should be properly prepared, shaped to the required profile and compacted before the subsequent pavement layers are placed.
- The subgrade beneath the pavement should be free from standing water. Where the subgrade has low permeability, appropriate drainage measures must be provided.
- The sub-base should provide uniform, stable support over the entire pavement area.
- The sub-base layers must be constructed using materials suitable for the selected design and placed and compacted in successive layers.
- The sub-base should minimise the risk of rutting, settlement, deformation and pavement movement in service.
- Where the subgrade has low bearing capacity, is silty, clayey or waterlogged, or is susceptible to the washout of fines, a separation layer, such as a geotextile, must be provided.
- The sub-base should ensure effective water management within the pavement construction, particularly by allowing water to drain away or infiltrate and by minimising its accumulation within the sub-base layers.
- The thickness of each sub-base layer must be determined in accordance with the design, taking into account the intended function of the pavement and the anticipated in-service loads.

GEOGRID INFILL

- The geogrids must be infilled with construction or decorative aggregate. The aggregate should be crushed to promote effective interlock and stabilise the infill.
- The geogrid infill should not finish flush with the top of the walls. After compaction, the aggregate should stand slightly proud of the geogrid walls and must never be below their top edge.
- The aggregate used to infill the geogrid clusters should have a grading that allows the spaces to be completely filled and the highest practicable degree of compaction to be achieved. The material must not remain loose within the cells; once placed, it must be thoroughly compacted.
- Expansion gaps must be filled with sand. The sand should completely fill the expansion gap, allowing the pavement to accommodate movement correctly and minimising migration of the aggregate.
- The grading of the geogrid infill and that of the bedding layer beneath the geogrids must be selected so as to prevent aggregate from migrating beneath the vertical geogrid walls. Material migrating beneath the walls as the pavement moves in response to thermal expansion of the polymer may cause the entire pavement to lift and deform.

CONDITIONS FOR SAFE USE OF THE SURFACE

To ensure the required performance, durability and safe use, the geogrid pavement should be constructed in accordance with design documentation that takes account of its intended use, anticipated loads, and the ground and groundwater conditions at the site. The thickness and specification of the sub-base and bedding layer must be selected to suit the pavement type, intended use and design loads. Where the subgrade has low permeability or groundwater conditions are unfavourable, measures specified in the design must be implemented, including additional stabilisation layers or drainage where required.

The following requirements must be observed during use:

- Do not allow any geogrid cells to remain unfilled or inadequately filled.
- The geogrid walls must remain protected by sufficient infill at all times, as exposed walls may be mechanically damaged.
- Missing or partial infill, or infill material of an unsuitable type or grading, may cause mechanical damage to the pavement components and impair serviceability.
- Any loss of infill material, localised settlement or mechanical damage to the pavement must be rectified and the infill replenished promptly.
- The pavement must not be used for purposes other than those for which it was designed or subjected to loads exceeding the values specified in the design documentation.
- The pavement construction, including the thickness and specification of the sub-base, should in each case be based on the relevant construction or detailed design documentation, taking account of the geotechnical conditions of the subgrade and the intended use of the pavement.

Periodic inspection of the pavement is recommended, including, in particular, an assessment of the level of infill in the cells, surface evenness, the condition of the edge restraints and any localised damage. Prompt rectification of any defects identified is important for maintaining the durability and safe use of the pavement.



ul. Nowy Dwór 4, 43-410 Zebrzydowice

+48 32 411 06 55 | natan@natanplast.pl

www.natanplast.pl