Installation advice and foundation clay pavers



VANDERSANDEN

TOGETHER WE BUILD GREATNESS

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Introduction

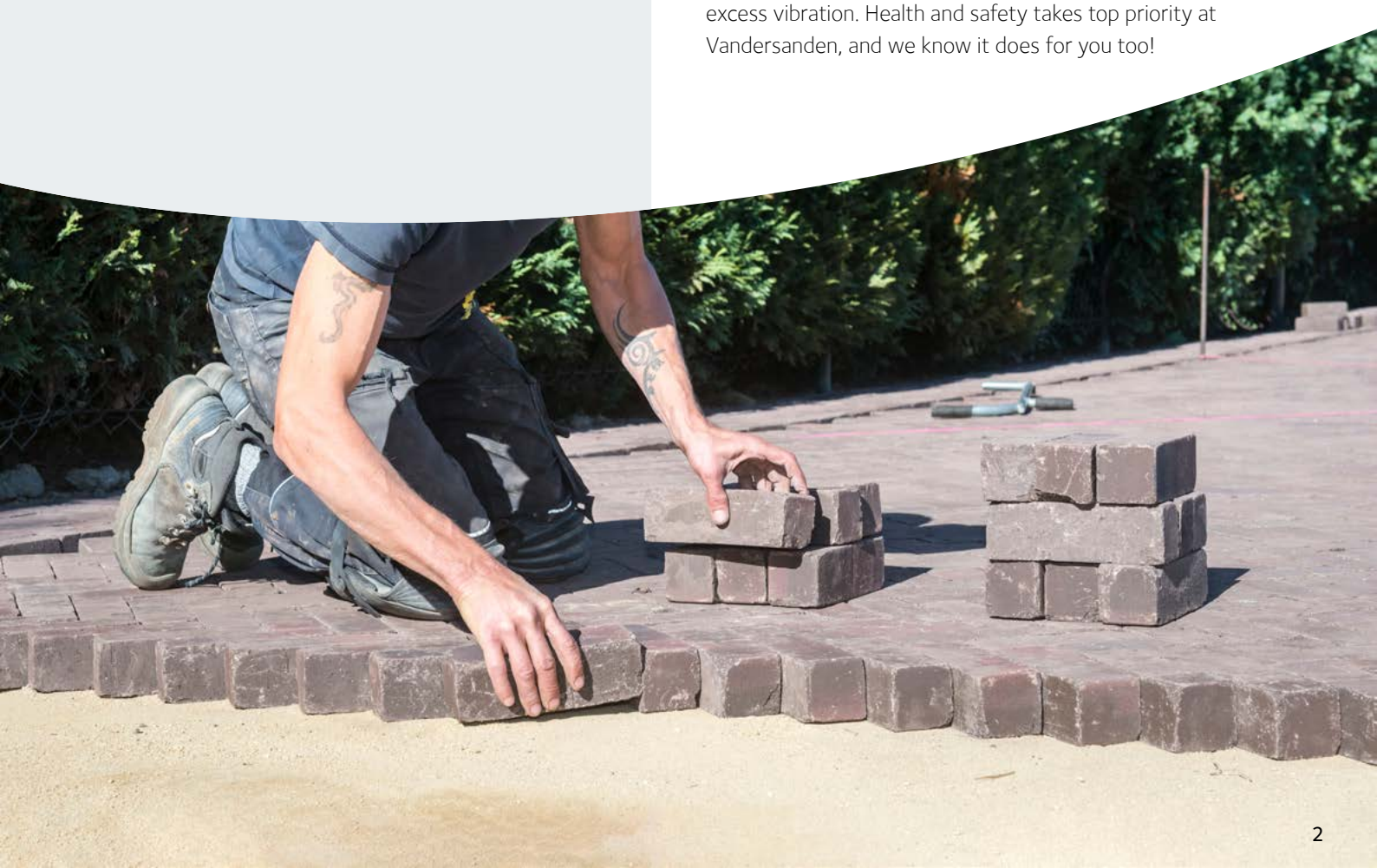
To achieve the best results, our high-quality and durable pavers must be installed correctly and need to be placed on a suitable foundation. With that in mind, Vandersanden is always happy to offer free advice, because after all: together we build greatness.

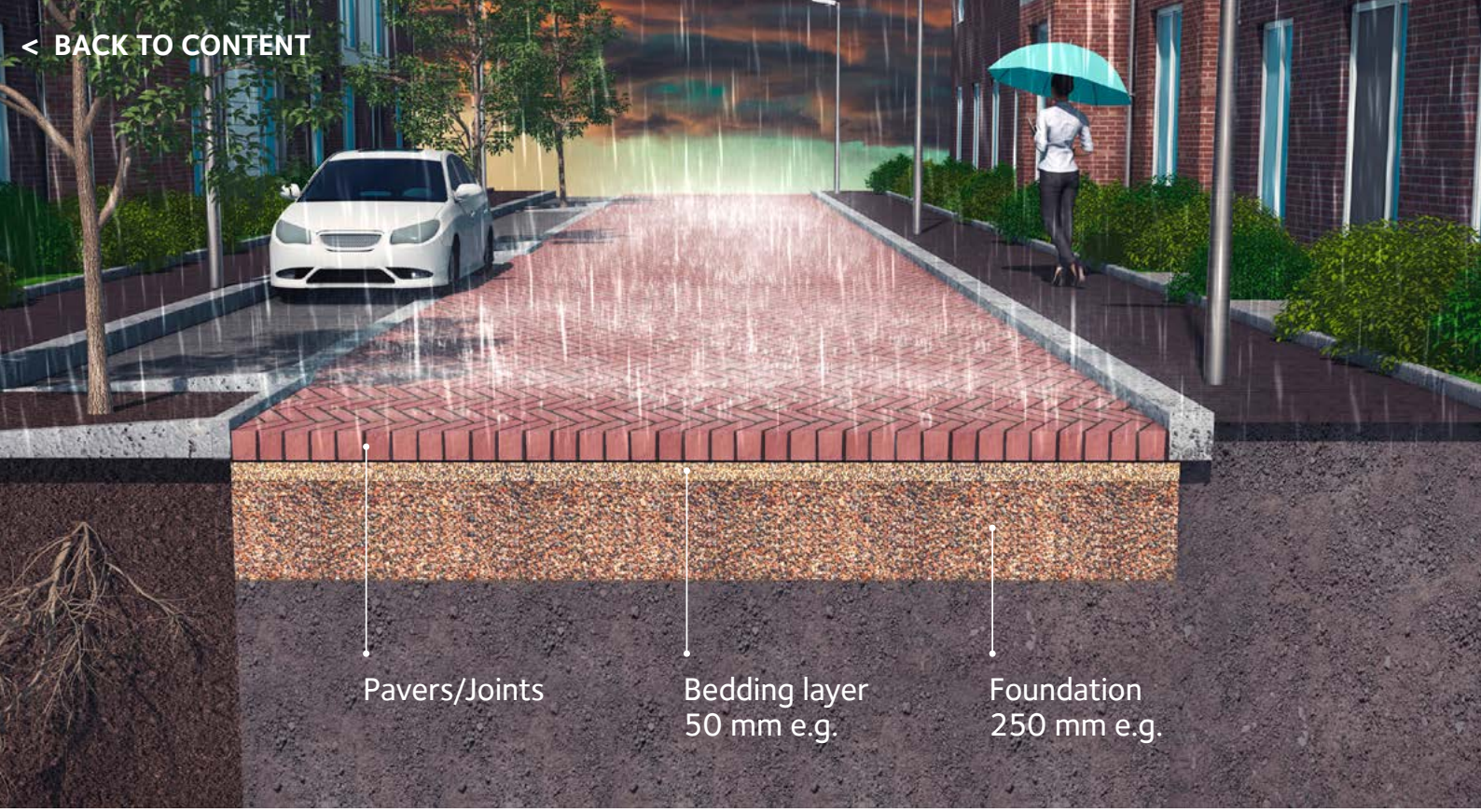
The first thing to do is to create a clear picture of your situation. This includes the location, the subsoil or the requirements set by your client. These criteria will help you decide on the most suitable way to install your pavers.

This advice applies only to standard pavers. For water-permeable paving, for example, specific measures should ideally be taken. Feel free to contact us for advice.

Safety for your employees

Make sure that the site you'll be working at is safe for you and your employees, and by no means less important, safe for the local residents and any traffic that might be passing too. Things to consider here include barriers, safety signs, traffic signs, diversions, excess noise and excess vibration. Health and safety takes top priority at Vandersanden, and we know it does for you too!



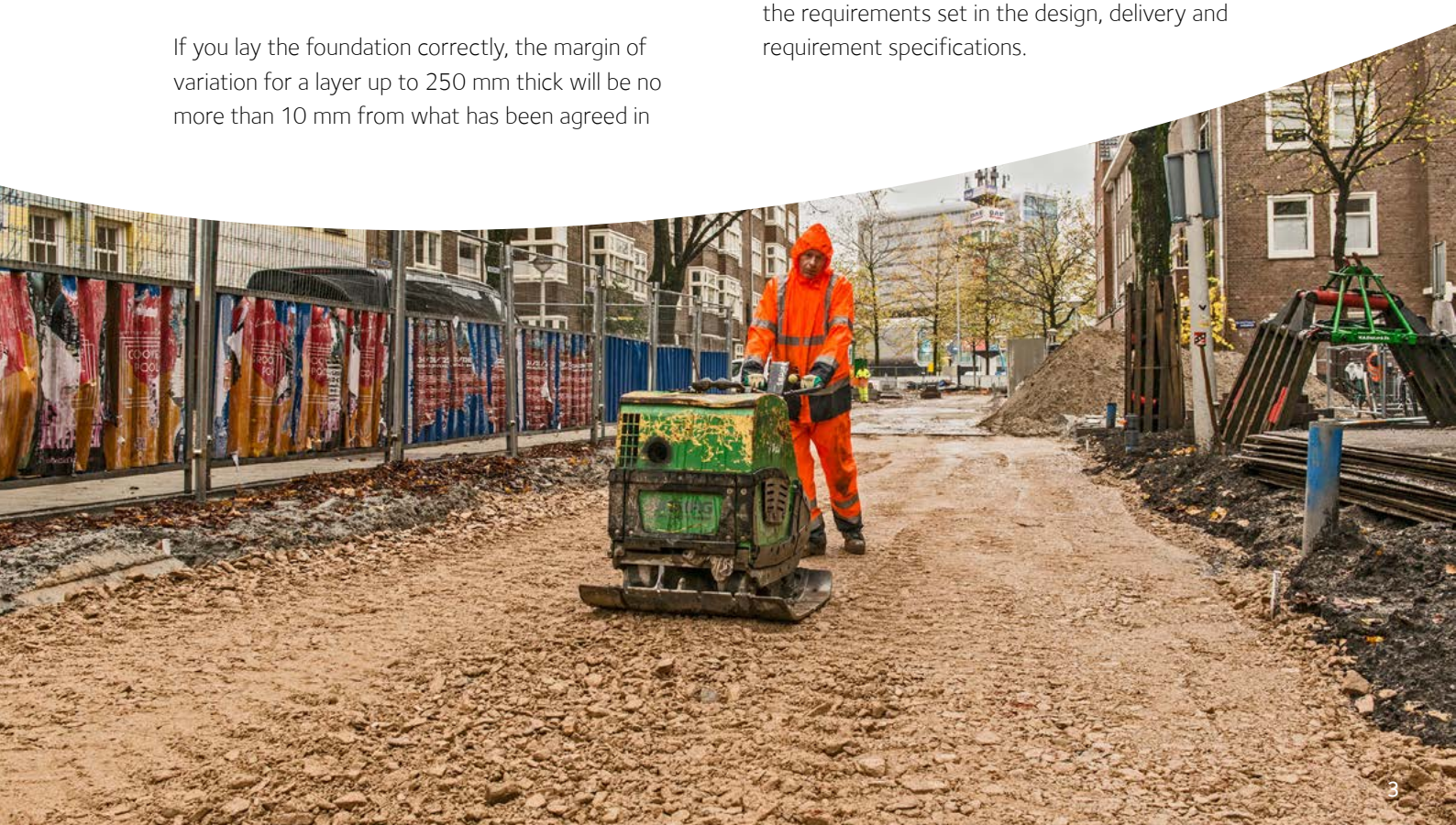


The foundation

The foundation is the structure that supports the bedding layer and the paving structure as a whole. This structure may consist of a bed of sand or a foundation layer. Among other things, the choice of structure and material depends on the subsoil, the future traffic and the requirements and experiences of the parties involved.

If you lay the foundation correctly, the margin of variation for a layer up to 250 mm thick will be no more than 10 mm from what has been agreed in advance. For layers thicker than 250 mm, this margin will be no more than 20 mm. The top surface of the foundation must be positioned no more than 10 mm lower than the agreed profile, and must not be higher than the agreed profile at any point.

In addition, be sure that the soil density complies with the requirements set in the design, delivery and requirement specifications.



The bedding layer

The clay pavers must be laid on a bedding layer of bedding sand or crushed aggregate that is at least 40 mm thick. No more than 70 mm of bedding sand or no more than 50 mm of crushed aggregate must be spread on top of the foundation. Make sure that both the foundation and bedding layer are properly and evenly compacted before you start laying pavers, as this will prevent sagging and rutting.

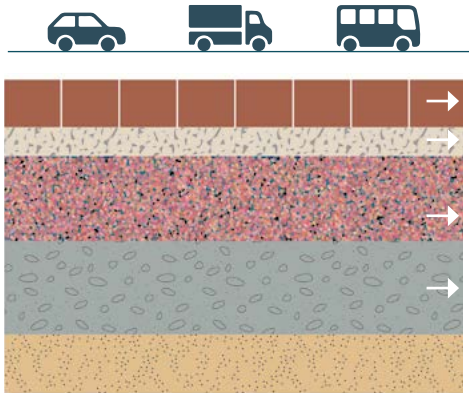




Substructures

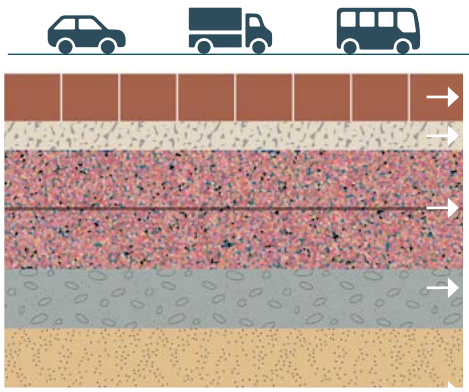
The substructure is a combination of pavement with jointing, bedding layer, foundation(s) and the local ground/soil. The way in which the different components are applied varies from country to country. You can find an overview for Germany, Belgium, and the Netherlands in the table below.

Substructures - Germany



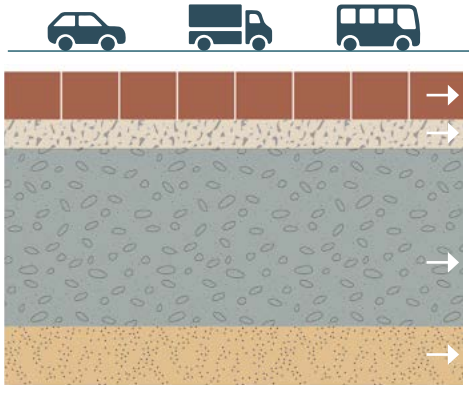
Example for motorised traffic	
Pavers/Joints	Often breaker sand is used for the joints, with a mixed fraction of 0-5 mm depending on the width of the joints.
Bedding Layer	Bedding layer exists out of sand split. The height of this layer is 0-50 mm and has a fraction of 1-3 mm.
Foundation	Gravel layer with a height of ± 200 mm with a mixed fraction of 0-45 mm.
Foundation (frost resistant)	Gravel layer exists out of very rought material. The height of the layer is ± 300 mm depending on the soil with a fraction of up to 100 mm.
Ground/Soil	The weaker the soil is, the more foundation is needed.

Substructures - Belgium



Example for motorised traffic	
Pavers/Joints	Often silver sand is used for the joints, with a fraction of 0-2 mm.
Bedding Layer	Bedding layer exists out of sand or split. The height of this layer is 30-40 mm and has a fraction of 1-3 mm.
Foundation	Gravel layer exists out of 2 layers with concrete granulate. The height of the layer is 150-250 mm with fraction 16-32 mm in the upper layer and fraction 32-56 mm in the bottom layer.
Foundation (optional)	Depending on the soil, starting with a sand layer. The height of the layer is ± 200 mm.
Ground/Soil	The weaker the soil is, the more foundation is needed.

Substructures - The Netherlands



Example for motorised traffic	
Pavers/Joints	Often breaker sans is used for the joints, with a fraction of 1-3 mm depending on the width of the joints.
Bedding Layer	Bedding layer exists out of sand or split. The height of this layer is 30-50 mm depending on the height of the foundation and has a fraction of 1-3 mm.
Foundation	Gravel layer exists out of concrete granulate. The height of the layer is ± 250 mm depending on the soil and it's a mix of fractions 4-16 or 4-32 mm.
Ground/Soil	The weaker the soil is, the more foundation is needed.



Water

Our pavers are frost-resistant, but when the sandy bedding layer is insufficiently water-permeable, there is a risk that there will be too little room for expansion in between the grains of sand in freezing temperatures. This may cause the sandy bedding layer to swell, pushing the pavers upwards. This phenomenon is also referred to as 'frost heaving'.

A sandy bedding layer with poor water-permeability can also cause thaw heaving: as the top layer is unable to shed the water it holds, there is a risk of it turning to quicksand.

As such, the gradation and water-permeability of the foundation material must be taken into account when choosing a suitable material, as any filter effect must be prevented. Water must not be allowed to affect the load-bearing capacity of the surface or cause rutting as a result of pumping.

The latter refers to water being 'pumped' out of the pores due to the traffic compacting the bedding layer. As part of this process, the water pumped out of the bedding carries fine materials with it, and as a result of these fine materials being shed from the bedding layer, rutting occurs.

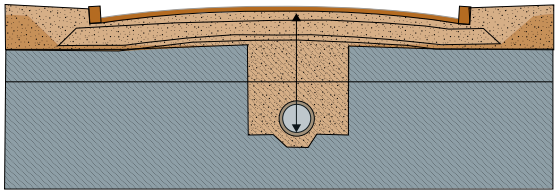
Would you like to find out more about our climate-adaptive approach and solutions?
Click the button!

Camber and slope

The camber of the pavers must be parabolic, unless agreed otherwise. The slope of the clay pavers must be no less than 20mm/m (slope percentage 1:50) and no more than 40 mm/m.

It is sensible to lay the pavers in a slightly convex curve of 0.5-1%. That way, the pavers are better able to transmit forces to one another under load. The slope should be applied as early as at the foundation stage to prevent rutting. Due to the slight slope, rainwater will infiltrate directly and not flow over the paving.

Road, parabolic camber





Parabolic camber profile

Slope % 1:50



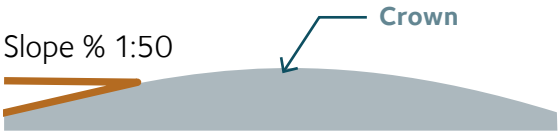
Straight camber profile

Slope % 1:50



Combination straight slope/ parabolic camber

Slope % 1:50



Single slope

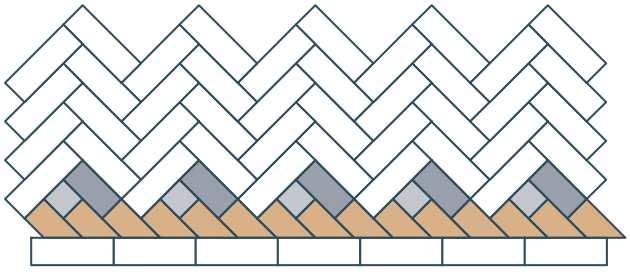
Slope % 1:50





Edging and edging pavers





The paving must be edged in such a way that no direct sideways movement occurs as a result of the intended traffic. At least one stretcher bond layer must be applied at the edging.

For durable paving with a high-quality finish, sawn edging pavers must be used as the edging course. These can be ordered from us prior to the start of the works, and as an added benefit, they also reduce the physical strain placed on road surfacers. If you opt to have the edging pavers delivered to your site at the same time as the pavers, you can lay both the pavers and the edging mechanically at the same time. If the edging is part of a drainage structure, the pavers must be laid 10 to 20 mm above the adjoining edging.

Discover all the benefits of edging with sawn edging pavers. Click the button!

Bonds
Functional and versatile

In the case of paver bonds, functionality is just as important as aesthetics. Depending on the intended use, the planning selection may be restricted by technical regulations. In addition to design aspects, there are also environmental issues and the fundamental goal of sustainability to consider.

Only a single, uniform bond should be used per surface. However, if pavers are laid together with special shaped pavers, such as bishop's caps, in individual places, additional design options are possible.

Functionality defines the choice of the bond

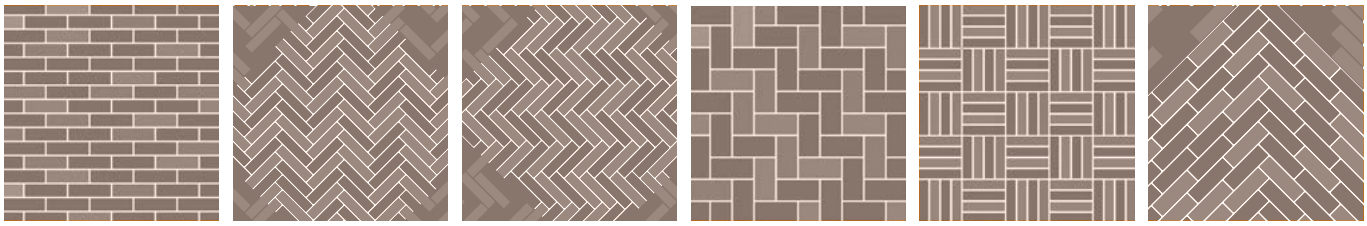
The functionality of the paved surface influences the best choice for the bond. Specifically for heavy traffic, herringbone, elbow and diagonal bonds are ideal. Avoid using cross joints and/or continuous longitudinal joints bonds in this case like stretcher bond or basket weave bond.



Town centre, Neuenkirchen (DE)
Genova KF62XL



Olympic Stadium, Amsterdam (NL)
Rossa LF80/70, elbow and stretcher bond



1 2 3 4 5 6

The **stretcher bond (1)** is considered the most common laying form and can be achieved with square or rectangular pavers. A linear and visually discreet image results from a stretcher bond, without having to use special fitting pieces.

In **herringbone (2)** or **Keper bonds (3)**, the 45° staggered arrangement of the pavers gives the surface a high level of stability. The offset of the rectangular pavers ensures that the horizontal forces are more dissipated.

The **elbow bond (4)** is based on a staggered arrangement of pavers at an angle of 90°. The visually clear and at the same time varied pattern is often used in road and path construction.

The **basket weave (5) bond** consists of rectangular pavers, each of which is arranged next to each other in duplicate or triplicate and combined to form small blocks. Basket weave bonds are mainly used as decorative designs.

A **diagonal bond (6)**, like the herringbone or Keper bond, uses a 45° offset rectangular arrangement pavers. Diagonal bonds have high surface stability and are often used in traffic area design.

Besides the common bonds, there are numerous special designs such as braided bond, spiral bond and centre stone bond. Vandersanden will happily provide you with additional information on request.

For more details on paver bonds, click the button.

Joints and jointing

Make sure that the joints are completely filled in before any load passes over the paving. This will prevent chipping, as well as sideways movement and “clapping”. Before filling the joints, remove all waste and sweep the paving. The choice of jointing material should be tailored to the material used in the bedding layer and foundation structure with a view to the watertightness or water-permeability of the paving.

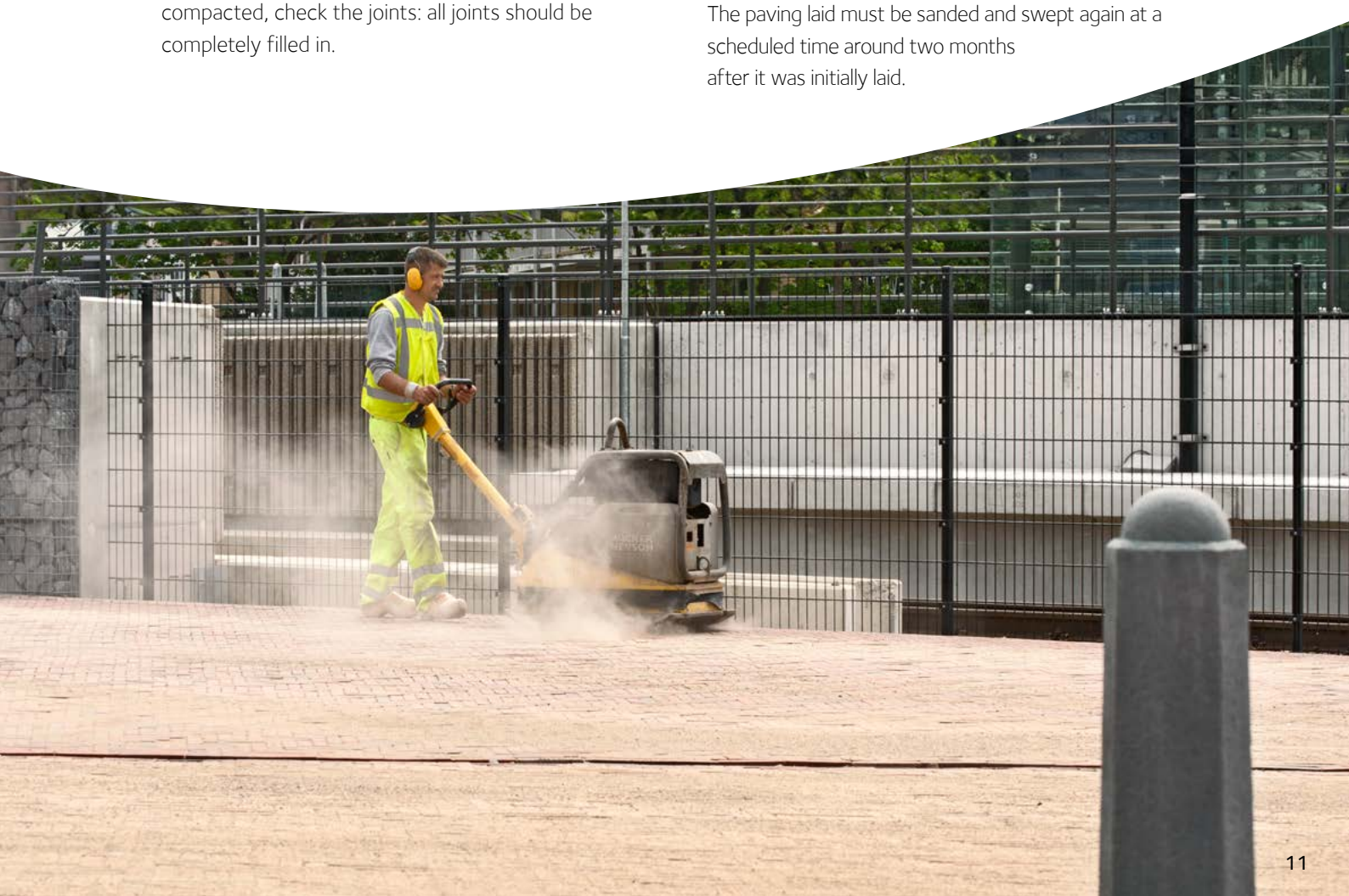
The paving must be compacted and pressed using a light to medium plate compactor that exerts between 20 and 30 kN of force. That way, you will ensure that the joints are completely filled and the sand is settled. With wirecut pavers in particular, the plate compactor must be fitted with a rubber base pad to prevent any damage. The direction in which the paving is compacted must overlap with the direction in which the bedding was compacted previously. Preferably, the paving should be compacted from the outside edge inwards.



To ensure the joints are completely filled, the paving must be washed (watered) after compacting. Once washed, the paving should be sanded again: bedding sand must be swept across the paving and another round of compacting must be carried out. Once compacted, check the joints: all joints should be completely filled in.

Repeat this sanding and sweeping process as often as necessary to ensure that the joints cannot be filled any further. Remove the excess sand from the paved surface before it is taken into use.

The paving laid must be sanded and swept again at a scheduled time around two months after it was initially laid.



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