Designing paved clinker brick surfaces

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1. Introduction

Paving roads, paths and squares with clinker paving bricks made of fired clay is an old and well-established construction method. The long-lasting beauty and structural stability of paved surfaces primarily depend on proper planning and laying, as well as the quality of the materials used.

This guide is designed to provide planners with suggestions for and tips on designing paved areas. The options presented in the guide are just a brief collection of examples from a huge range of different design possibilities that can be achieved by combining various patterns and laying techniques. When creating such patterns, you can benefit from the fact that clinker paving bricks are available in different formats and shades, meaning that the clinker bricks themselves can be used to create colour contrasts. The ceramic shades produced when the clinker bricks are manufactured are permanent.

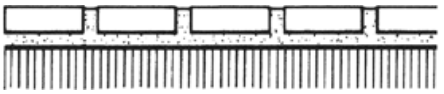
2. Laying systems

Clinker paving bricks can be laid either on edge, namely with the stretcher face on display, or flat. Designs can also switch between bricks laid on edge and flat for creative purposes. Whatever design you choose, it is important to ensure that in all cases, the sand or mortar foundation must have the required thickness of 3 to a maximum of 5 cm when compacted.

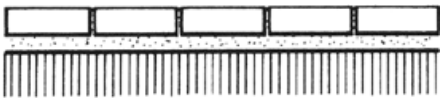
For surfaces that are frequently driven on and therefore subjected to high loads, we recommend laying the bricks in just one system to guarantee an even load transmission on the substratum.

When bricks are laid flat, a narrow joint (approx. 3 mm) is primarily used, and the wide joint (8 to 10 mm) is less common. When laying the bricks carefully and making sure that the joint widths are observed, you must also ensure that the joints are filled well.

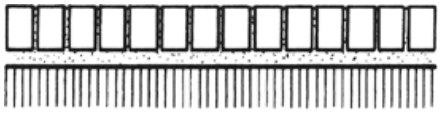
In the case of bricks laid on edge with a narrow joint, you need to pay particular attention to ensuring that the joints are filled right down to the bottom. The filling of the joints is extremely important for the bond strength of the paving.



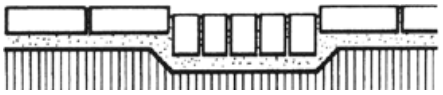
a) Laid flat with a wide joint (8–10 mm). Suitable for surfaces subjected to lesser loads, for example garden paths, or for bricks laid in mortar.



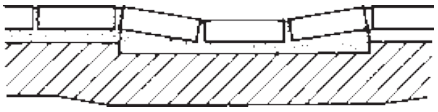
b) Laid flat with a narrow joint (approx. 3–5 mm).



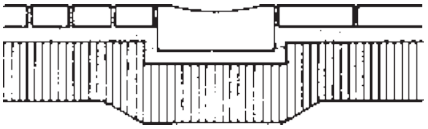
c) Laid on edge, for example bar-format paving bricks



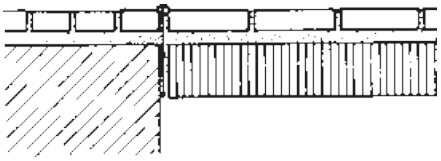
d) Alternating between flat and on edge, for example to form a gutter; laid in mortar on concrete



e) Paving a gutter (example). Laying clinker paving bricks in a gutter area requires a mortar foundation (mixing ratio: 1:3).



f) A gutter paved with gutter bricks



g) Creating an expansion joint to separate bricks on different sub-bases.

h) Tram track paving with joint sealing pursuant to the Technical Terms of Delivery for Bituminous Joint Sealing Compounds (TLbit Fug)

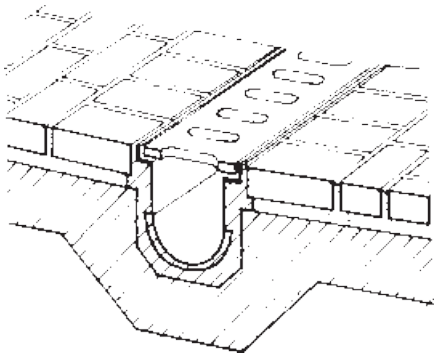
Laying systems for clinker paving bricks

3. Edge formation

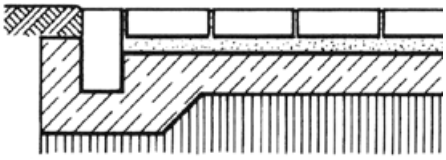
The edges of paved surfaces should guarantee a well-designed transition to neighbouring areas and above all have the purpose of stabilising the paving surface to prevent it from shifting to the side.
If edging bricks are laid in concrete, you must ensure that no water can accumulate in the edge area. Drainage outlets must be installed where necessary. Properly designing edging structures for paved areas is a prerequisite for the structural stability of the adjacent paving. In most cases, the edging should therefore be laid in a concrete foundation. The paving must always be laid sloping down towards the edge.

4. Draining paved surfaces

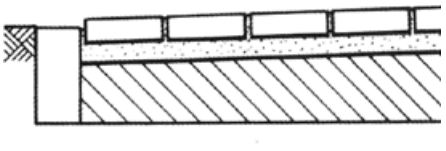
Clinker paving bricks are a water-permeable paving option. This is above all important in terms of ecological factors because some of the rainwater that lands on the bricks soaks into the ground, thus lessening the load on the sewage network. While some of the rainwater passes through the bricks, the rest flows off the bricks as surface water. It is therefore important to ensure that the paving is properly drained. In addition to the required inclination, water-discharge measures should also be taken, for example the installation of gutters, water channels or drains. Which type of measure is chosen depends on the properties of the base courses and the substratum and the laying system used.



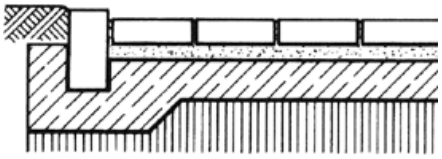
Forming a water intake channel with the help of a prefabricated gutter element made of concrete and with a cast-iron cover. The paving bricks are laid in a sand foundation on a concrete base course.



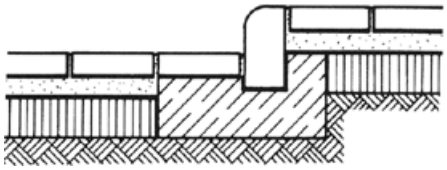
Flush with the paving area; the slope leads away from the edge of the paving



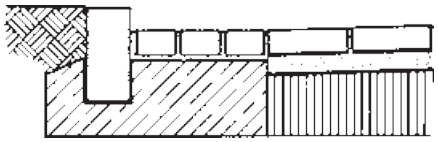
Edging laid approx. 2 cm under the paved surface, low kerb



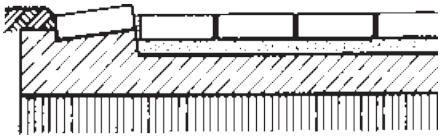
Protrudes approx. 2 cm above the paving area, high kerb



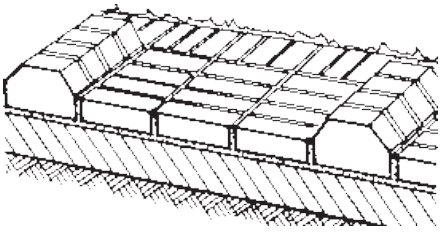
Edge formation using moulded clinker bricks as a high kerb



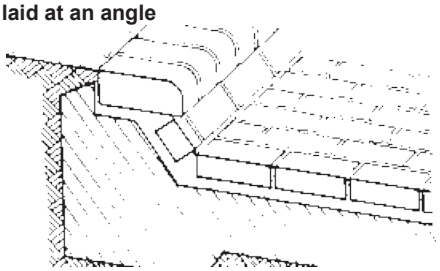
Edge formation with a large height difference and adjacent gutter



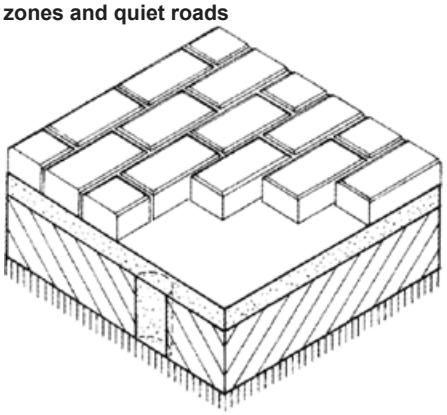
Edge formation with clinker paving bricks laid at an angle



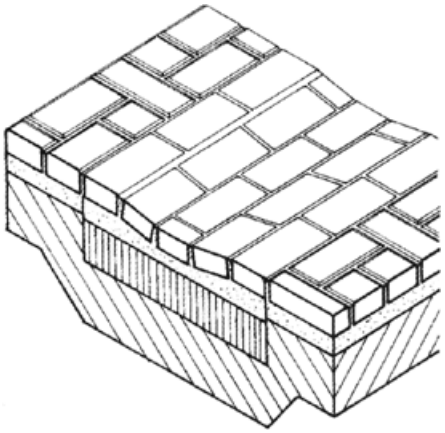
Raised clinker bricks to protect paving edges from being driven on. Normal clinker paving bricks used. Also suitable as ‘speed bumps’, for example in home zones and quiet roads



Trough-shaped formation of the edge of a path, for example for access points with adjacent green areas or embankments. Not suitable for connecting a road to a pavement



Water drainage by means of drainage openings at regular intervals going through a compact base course, for example a hydraulically bound base course, concrete or asphalt, into water-permeable layers such as a gravel base course. Clinker paving bricks laid in a sand foundation

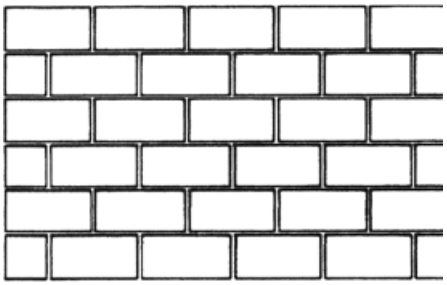


Formation of a gutter with normal clinker paving bricks. While the normal clinker paving bricks are laid in a sand foundation, the clinker bricks used in the gutter are laid in mortar (1:3).

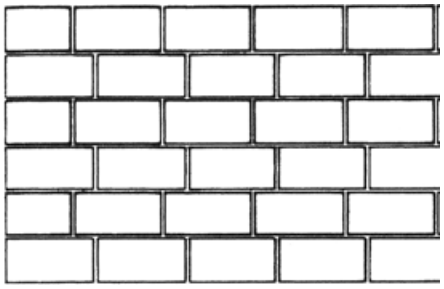
5. Paving bonds

5.1 Stretcher bond

For rectangular or square clinker paving bricks, the stretcher or running bond is the classic, or most frequent, paving pattern. The requirements for laying paving in this bond type are easy to meet. Stretcher bonds are easy to lay and require no specially cut bricks. They also allow curves to be laid without major difficulties.



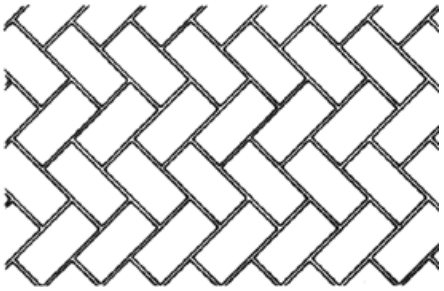
Half bond
Suitable as road paving due to its good bond strength



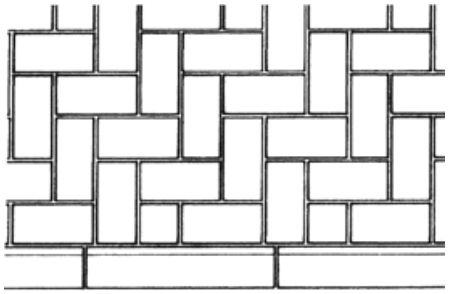
Three-quarter bond
Its bond strength is not as good as that of the half bond due to the smaller overlap dimension.

5.2 Herringbone or raking bond

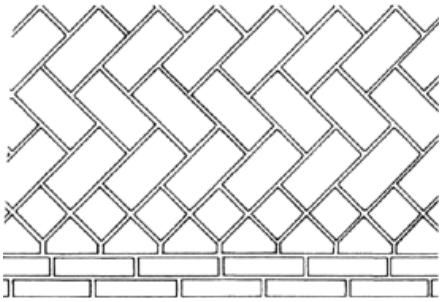
This bond is ideal for paths and slopes, for example driveways. It is particularly structurally stable because its clinker paving bricks at a 45° angle have an excellent bond strength. The evenly distributed joint lengths created by laying the bricks at a 45° angle to the path axis enable this bond to achieve particularly good grip. For the edges of the paved area, you can either use specially cut bricks, so-called mitred bricks, or cut the clinker bricks placed at the edge to fit. The clinker bricks can be conveniently cut to size with a cutting wheel. When laying the herringbone bond in the direction of the path, half clinker bricks are sufficient for fitting the paving to the edge.



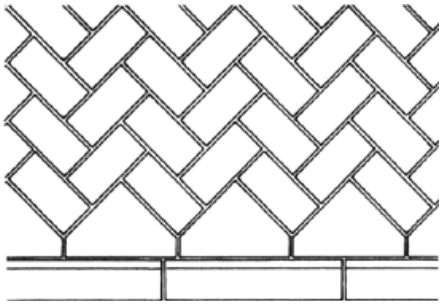
Herringbone or raking bond



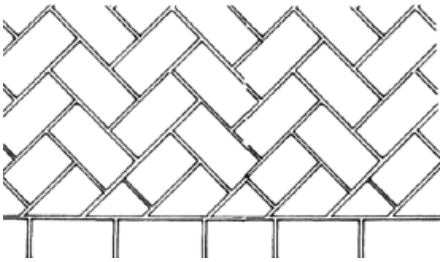
Herringbone bond laid in the path direction. Fitted to the edge with half clinker bricks



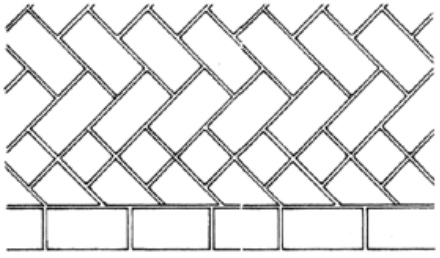
Herringbone bond with mitred bricks



Herringbone bond with mitred bricks



Bordering of the herringbone bond with the help of three-quarter clinker bricks and diagonally cut clinker bricks



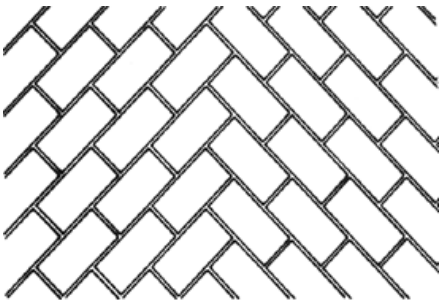
Bordering of the herringbone bond with the help of half clinker bricks and cut clinker bricks

53 Diagonal bond

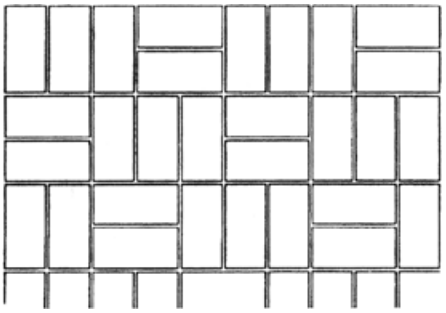
The diagonal bond corresponds to the description of the herringbone or raking bond.

54 Basket weave or parquet bond

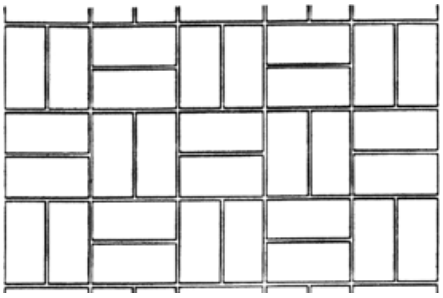
Like in parquet flooring, the clinker paving bricks are grouped in small blocks of two or three clinker bricks or laid around a central brick. This results in patterns with huge scope for variation. Given that these bonds only have a low bond strength, they are primarily used as decorative bonds for garden areas or terraces. If you plan to use them in areas subjected to higher loads, for example in pedestrian zones, the bricks need to be laid using bonded construction.



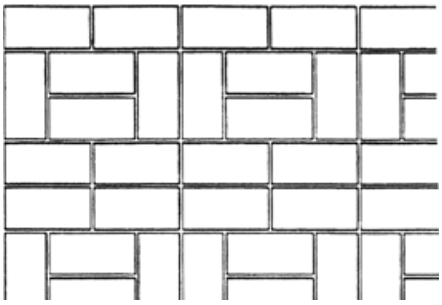
Diagonal bond



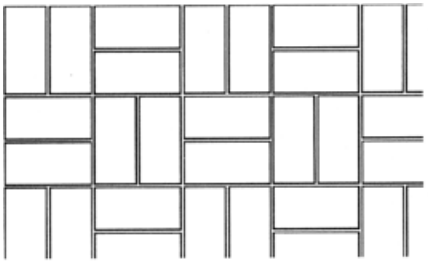
Alternating groups of two or three clinker paving bricks laid flat in alternating directions



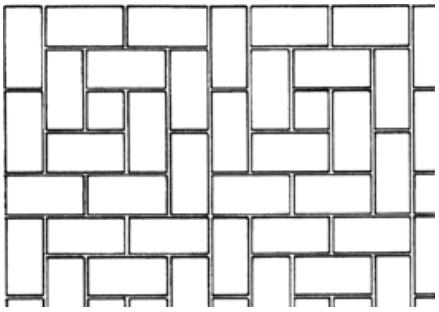
Groups of two clinker paving bricks laid flat in alternating directions



Formation of small blocks comprised of eight clinker paving bricks laid flat in alternating directions.



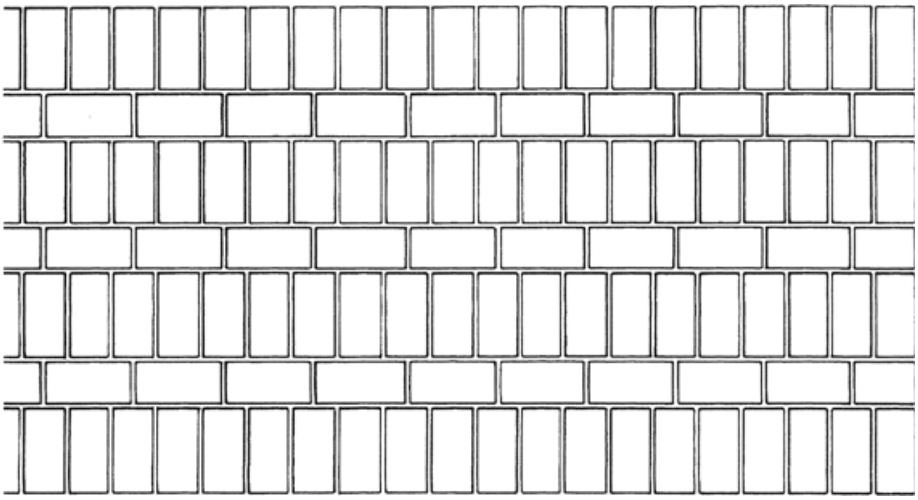
Braid bond using bricks laid on edge with additional squares, 80 x 80 mm or 60 x 60 mm. Ideal for two-tone designs



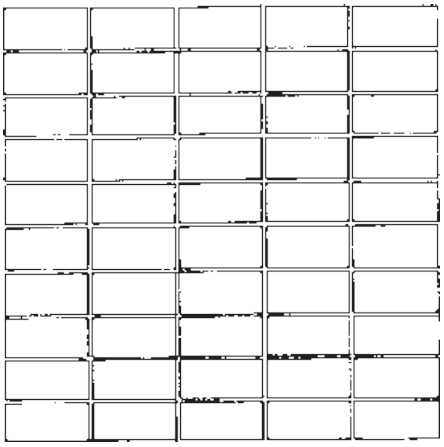
Middle brick bond using bricks laid flat. Formation of small blocks comprised of 12 clinker paving bricks with a half-brick in the middle

55 Linear paving patterns

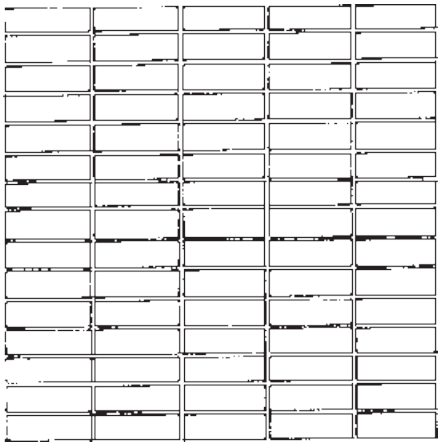
Linear paving patterns give the paved surface a strict linear structure. When laying bricks in these patterns, it is important to ensure that the clinker bricks are laid precisely in line to achieve straight joint lines. This paving pattern cannot be used to lay curves. Due to a lack of bond strength, these bonds are not recommended for surfaces that are driven on.



Linear pattern with bricks in alternating directions

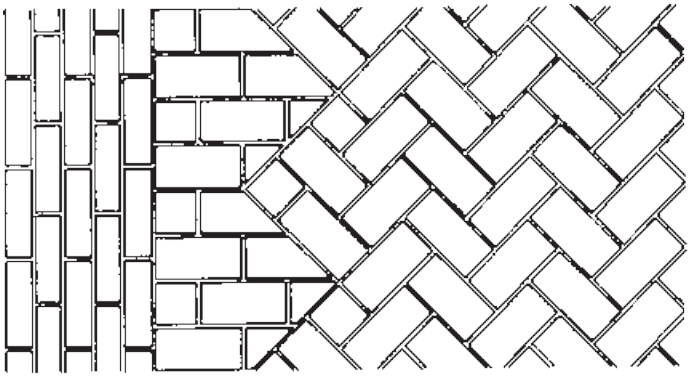


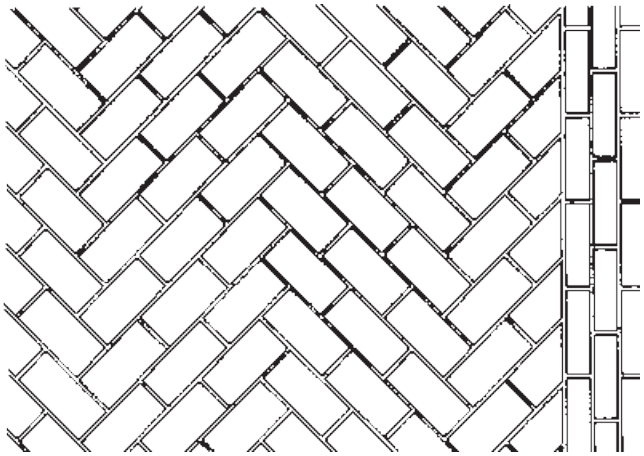
Linear pattern using normal rectangular bricks



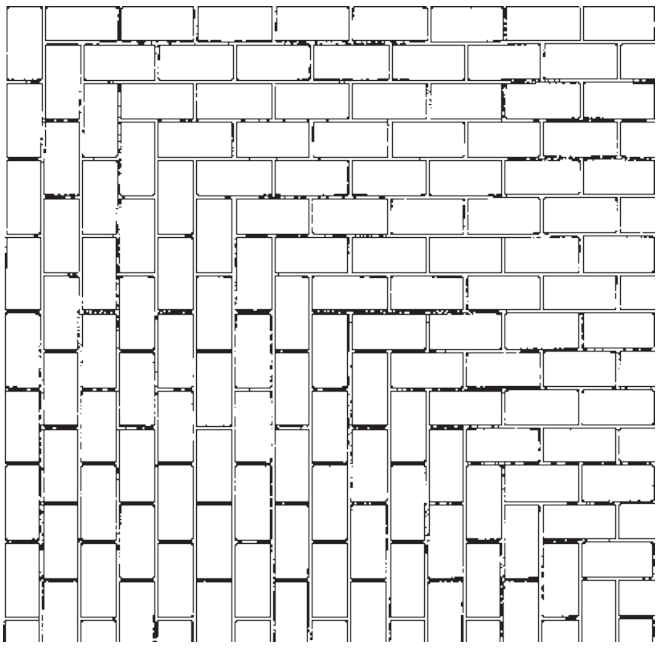
Linear pattern using clinker bricks laid on edge or clinker brick slips

5.5 Design examples for different laying systems

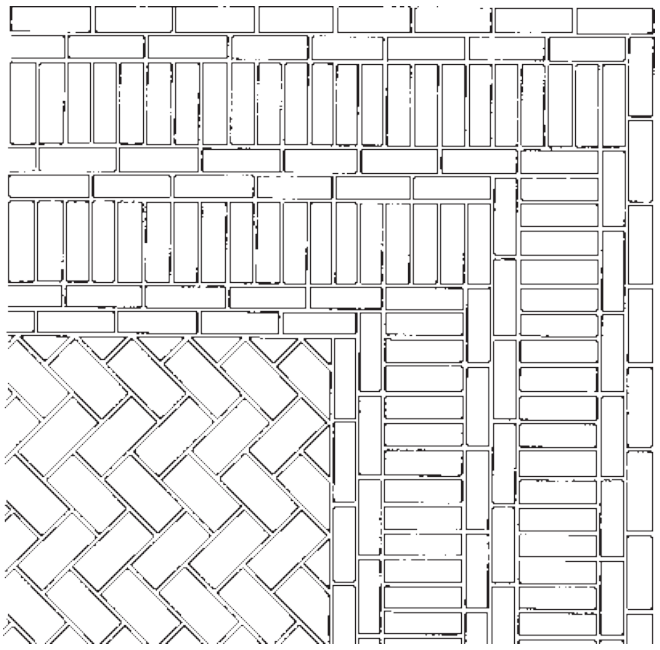




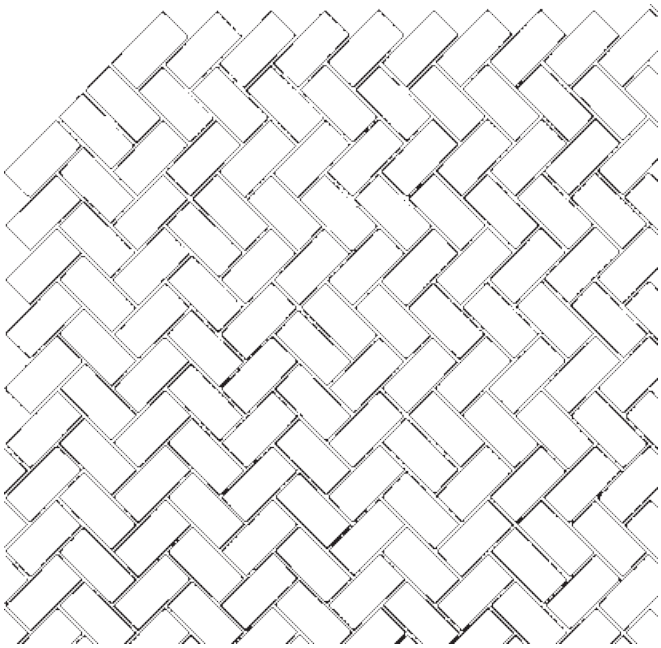
Variations on the herringbone bond with clinker paving bricks laid on edge on the edge of the paved area



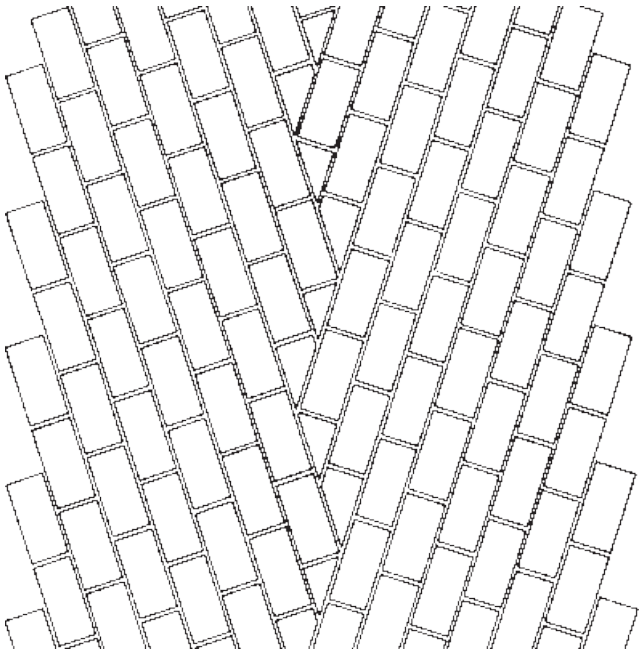
Clinker brick paving of a right-angled corner area using a stretcher bond



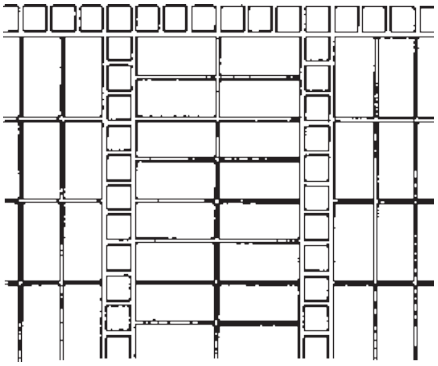
Edge formation using a strongly emphasised pattern for a paved area using the herringbone bond



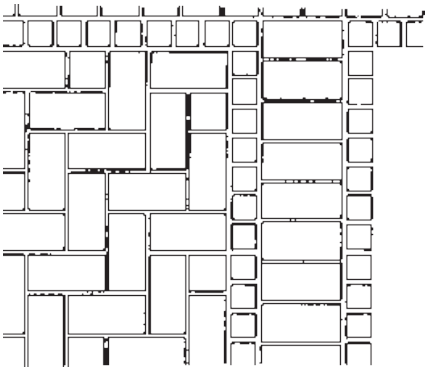
Clicker brick paving of surfaces with bends using the herringbone bond, bend angle: 45° or 90°



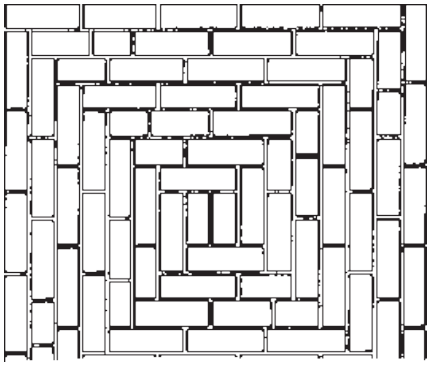
Clinker brick paving of a V-shaped paved area using a stretcher bond



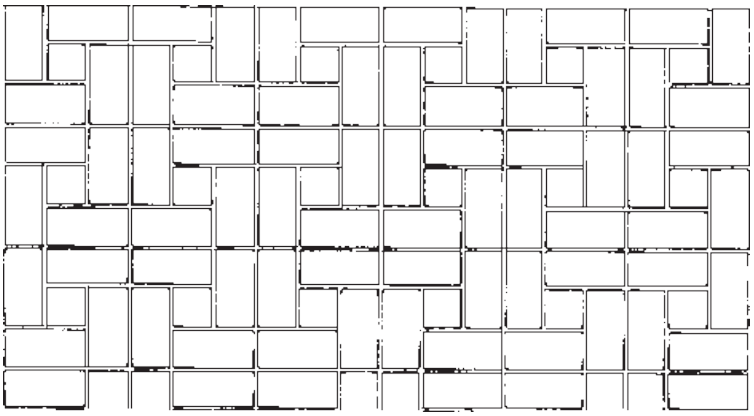
Combined clinker paving bricks in different formats: 200 x 100 + 60 x 60 mm



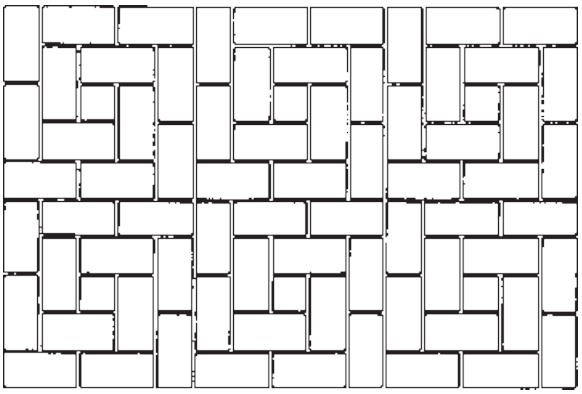
In connection with ornamentally designed frieze elements



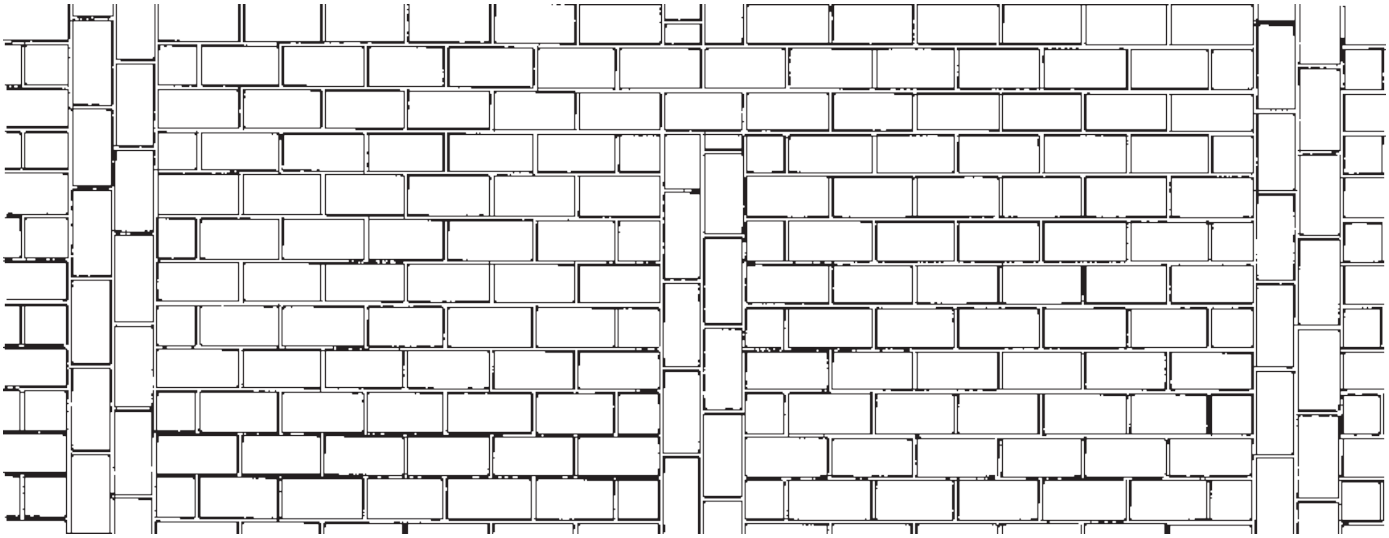
Formation of a square with a middle brick bond using clinker bricks laid on edge



Middle brick bond with adjacent squares



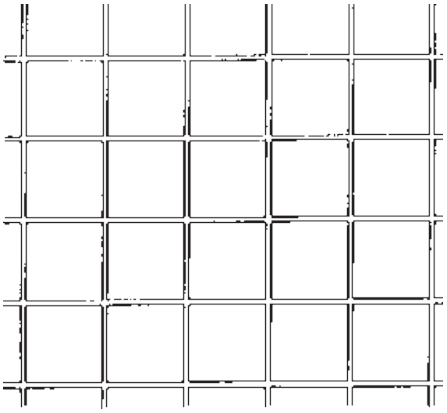
Middle brick bond with a braid pattern



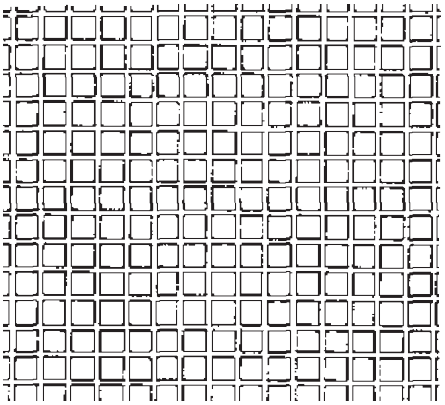
Structuring of different areas using different coloured frieze elements

6. Design examples of square clinker brick formats and mosaic paving

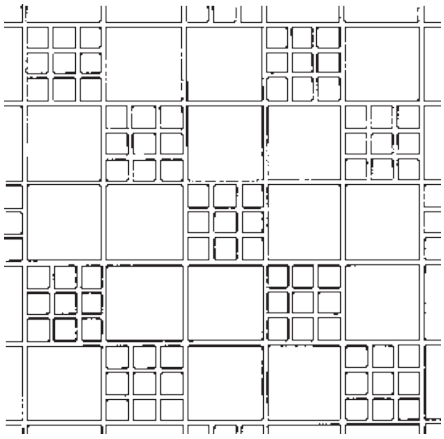
In addition to the primarily used long formats, square clinker brick formats are also popular when paving areas and structural elements. The modular dimensions (e.g. 200 mm) guarantee that different formats can also be laid together. When laying square clinker paving bricks, it is important to ensure that clinker bricks of different formats have the same thickness to the greatest possible extent.



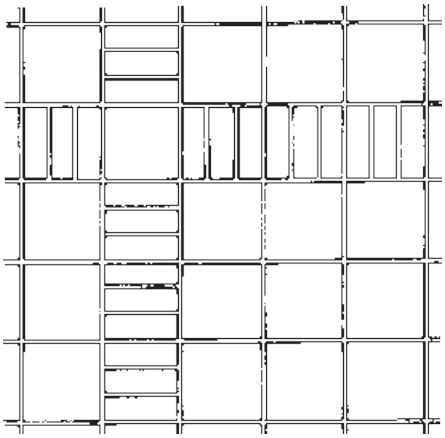
Square format (200 x 200 mm – 180 x 180 mm – 150 x 150 mm)



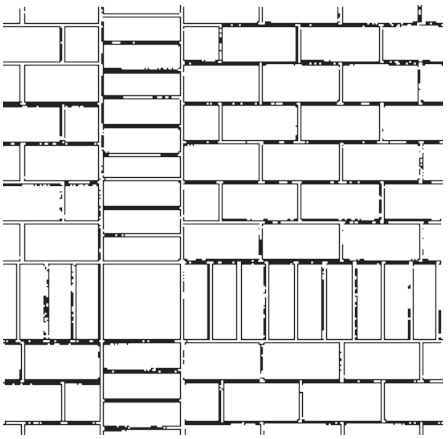
Mosaic paving (60 x 60 mm) laid as a paved surface. Above all suitable for smaller areas



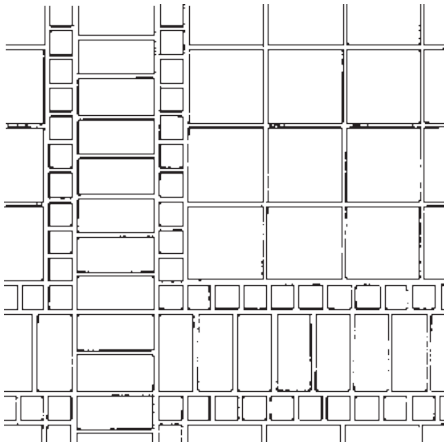
Square format (150 x 150 mm – 180 x 180 mm – 200 x 200 mm) alternating with mosaic paving (60 x 60 mm)



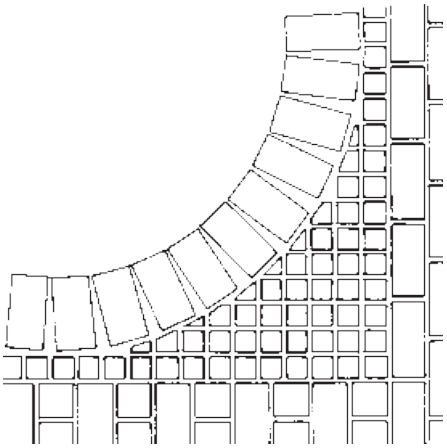
Square format (200 x 200 mm) with frieze elements using clinker paving bricks laid on edge (200 x 100 x 65 mm)



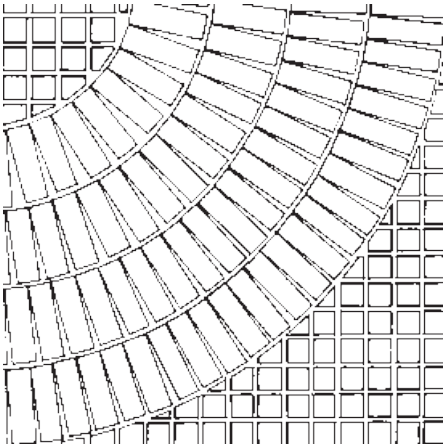
Square format (200 x 200 mm) in the intersections between clinker brick frieze elements



An ornamentally designed paved area using three different formats

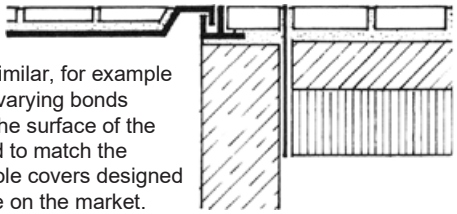


Adapting the paving to fit a round shape with the help of mosaic paving

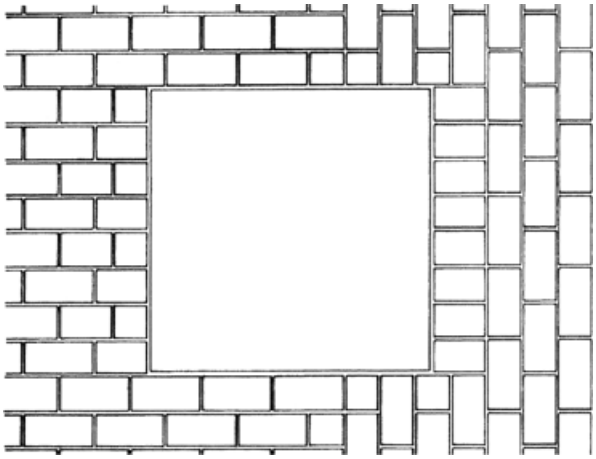


Adapting paved areas to fit curved shapes with the help of mosaic paving

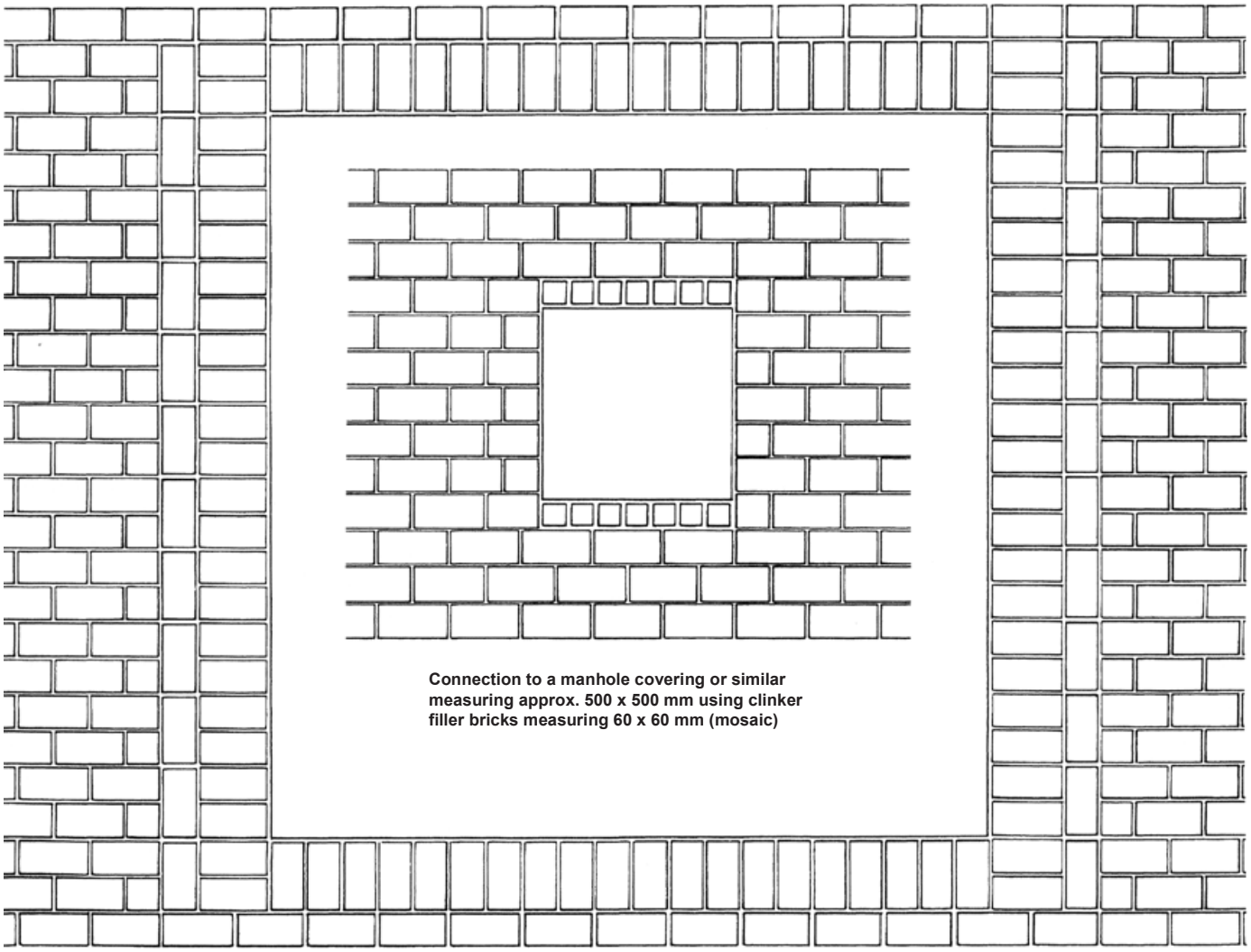
7. Connecting clinker paving to tree grids, manhole covers etc.



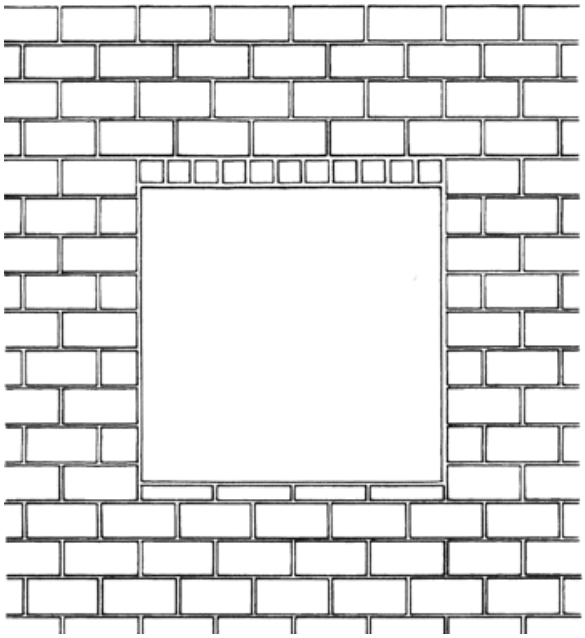
Connection to tree grids or similar, for example measuring 80 x 80 cm, with varying bonds using three-quarter bricks. The surface of the manhole cover can be paved to match the paving surrounding it. Manhole covers designed for this purpose are available on the market.



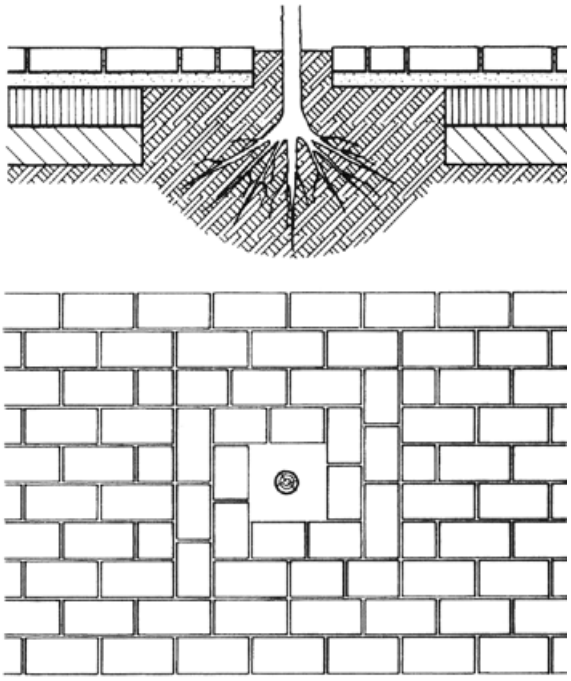
Connection to a large tree grid measuring approx. 2 x 2 m



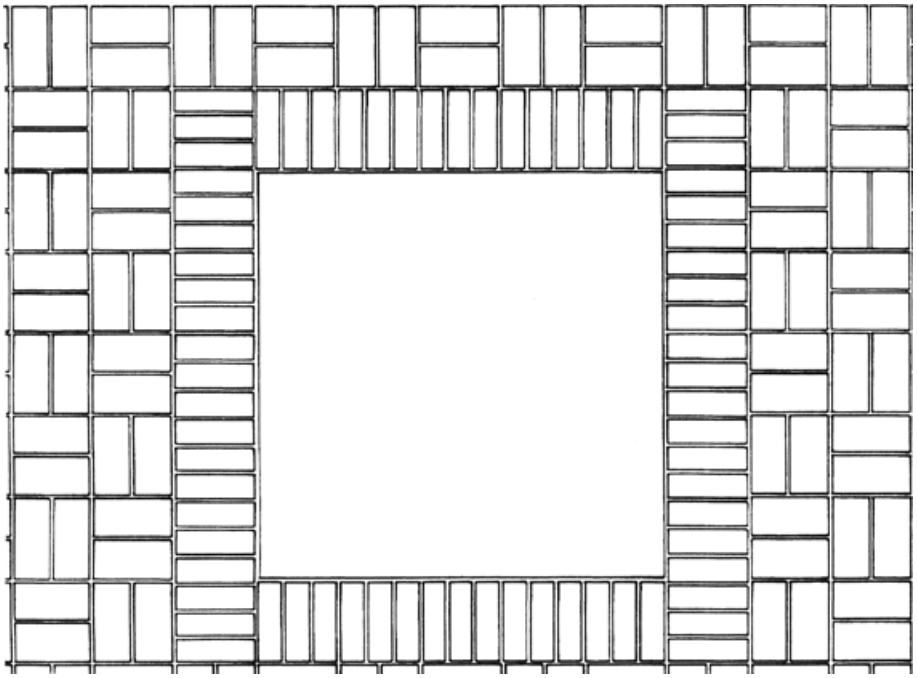
Connection to a manhole covering or similar measuring approx. 500 x 500 mm using clinker filler bricks measuring 60 x 60 mm (mosaic)

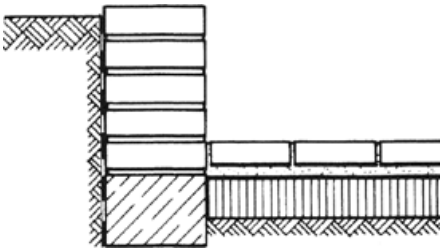


Connection to a manhole cover, tree grid or similar (measuring approx. 800 x 800 mm)
Use of clinker filler bricks measuring 60 x 60 mm (mosaic) or 50 x 200 mm



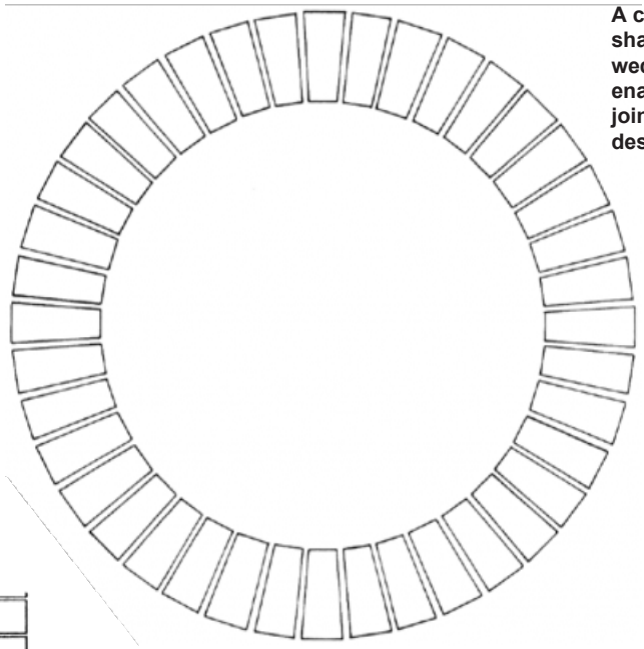
Forming a small tree grid. As the tree grows, one ring can initially be removed, followed by a second at a later point in time. These rings are laid in a sand foundation that is applied directly on top of the soil.



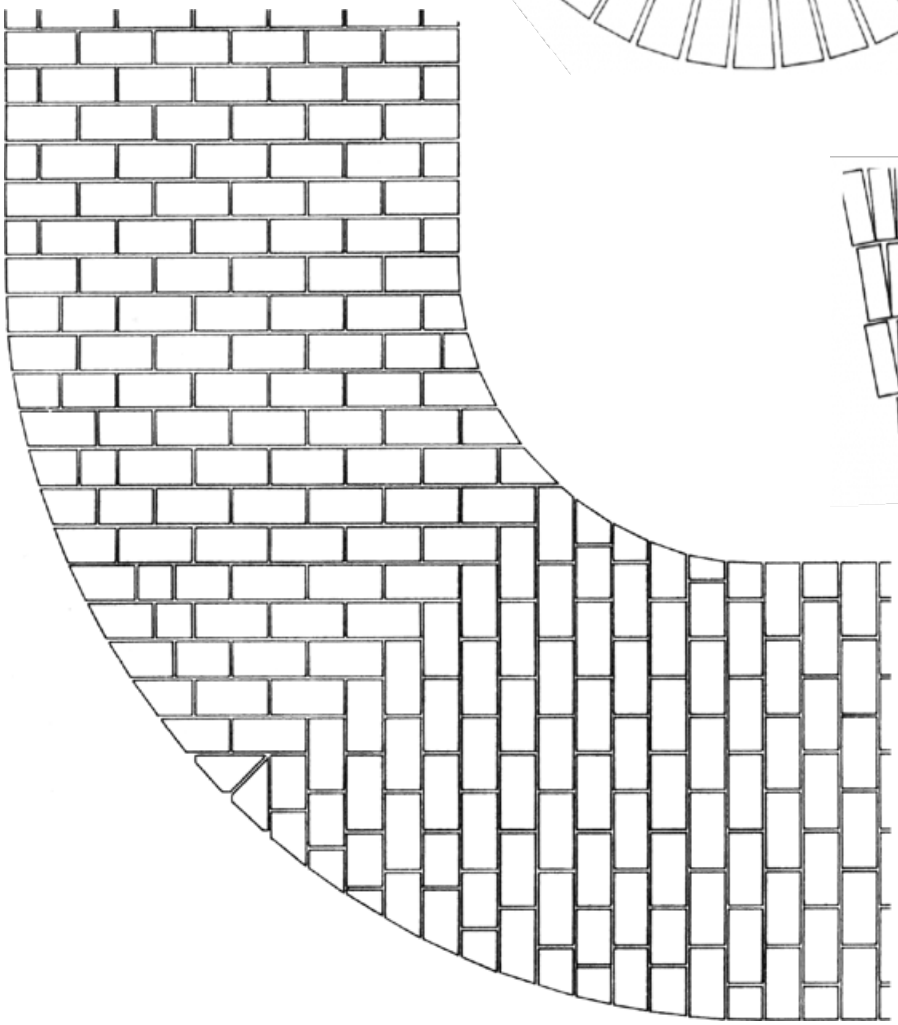


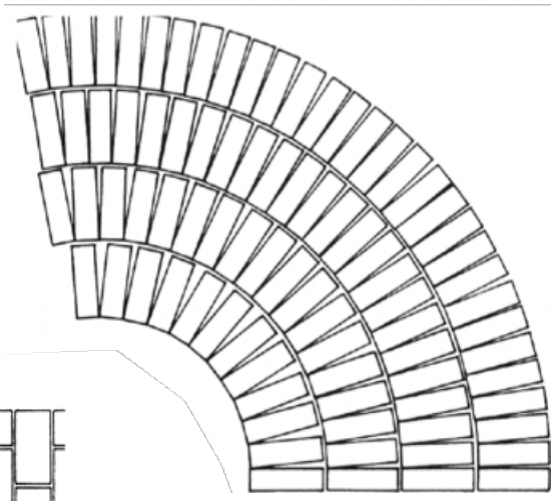
A brick-built planter rising out of the paving. Inner dimensions: approx. 1 x 1 m. Joint reinforcement can be added where necessary. We recommend adding a moisture barrier inside the planter to prevent efflorescence on the outer walls.

8. Paved curves and circles



A circle laid using wedge-shaped clinker bricks. Using wedge-shaped clinker bricks enables you to achieve equal joint widths in all locations if desired for aesthetic reasons.

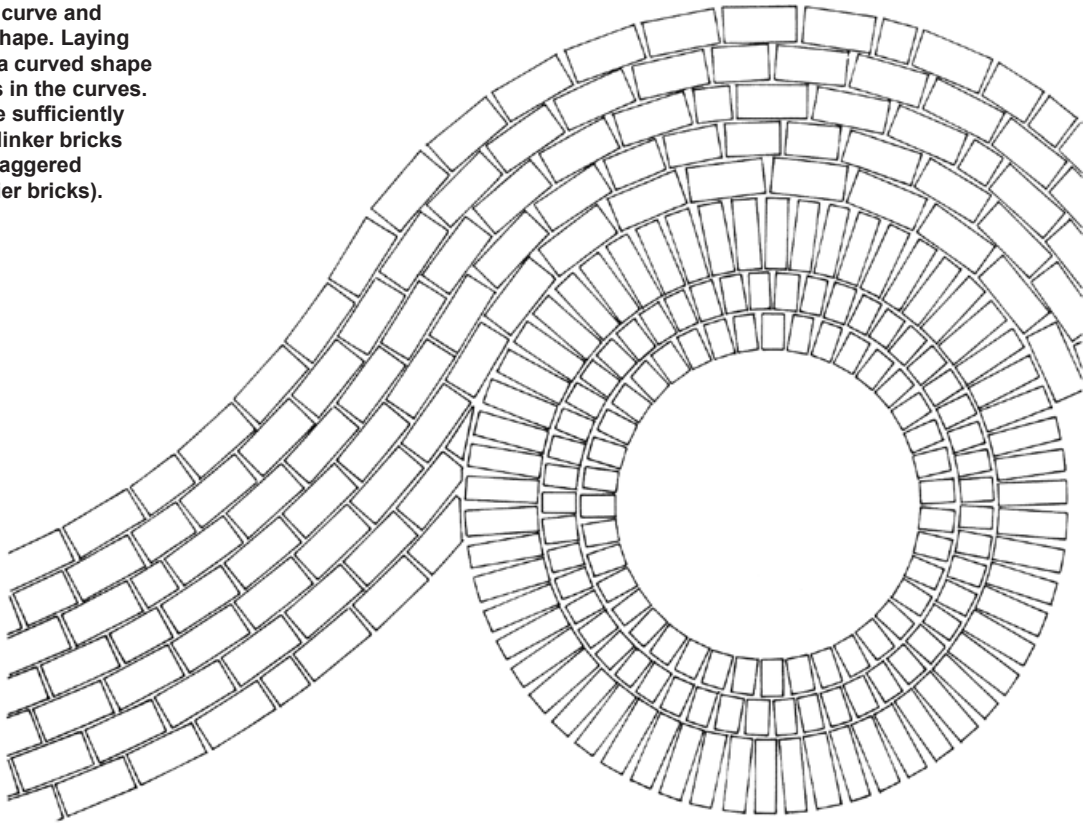


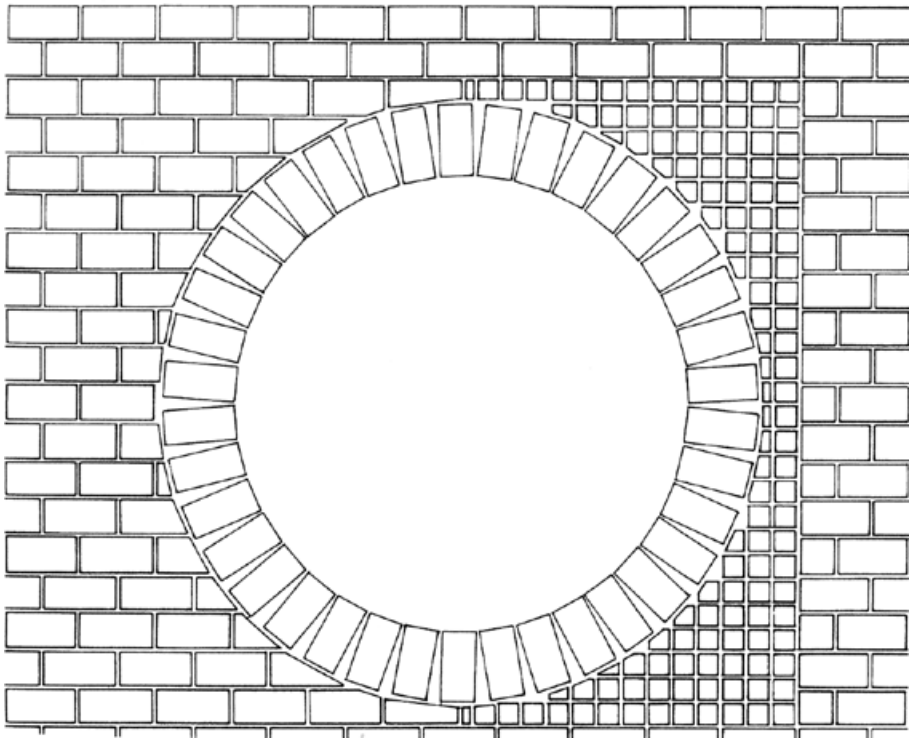


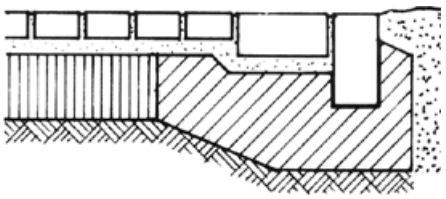
A paved curve comprised of clinker paving bricks laid on edge or long clinker paving bricks. Edge formation as described in section 2.

A curve laid using rectangular clinker bricks. The edge bricks must be cut to size. Suitable for garden and park paths or pavements that are not driven on. Structural edge formation as described in section 2. Edging structures for areas paved with clinker bricks expected to be subjected to a low shear load

Clinker brick paving laid in a curve and transitioning into a circular shape. Laying rectangular clinker bricks in a curved shape leads to wedge-shaped joints in the curves. The radii therefore need to be sufficiently wide. In the circular shape, clinker bricks laid on edge alternate with staggered standing clinker bricks (soldier bricks).

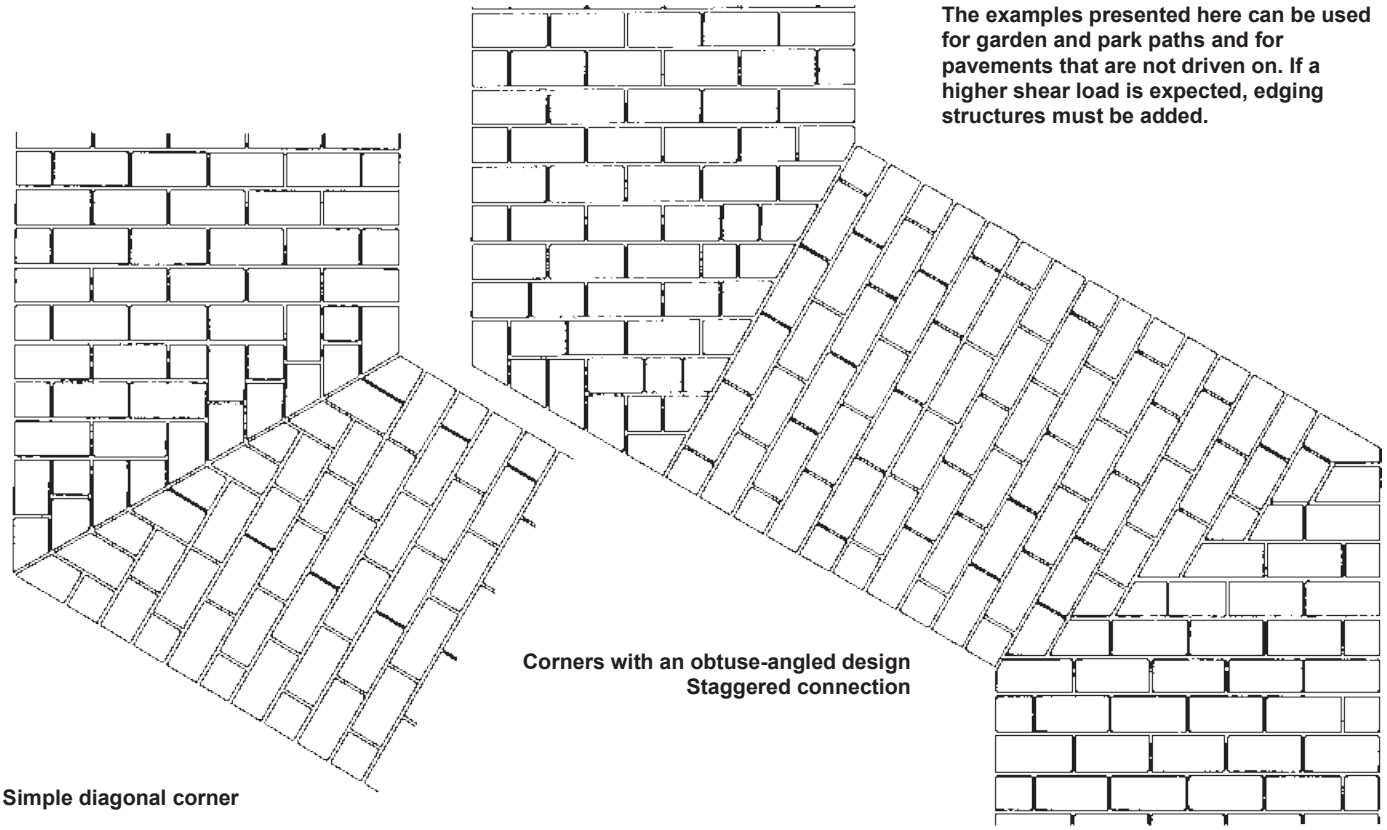






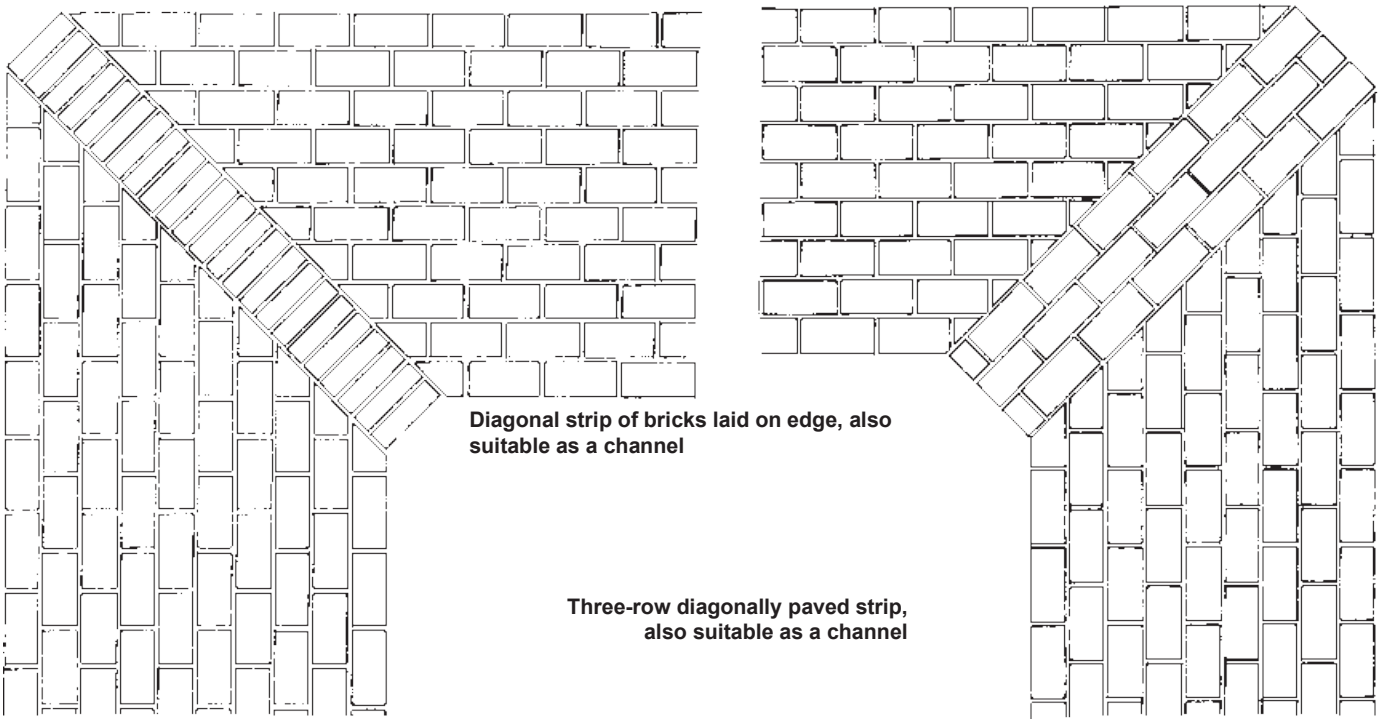
Connecting rectangular paving to a circular shape made using the same clinker bricks as those used in the main paved area (wedge joint). The connection to the paved area is possible by using the cutting wheel to cut the bricks in the paved area to shape or by additionally using mosaic paving.

The examples presented here can be used for garden and park paths and for pavements that are not driven on. If a higher shear load is expected, edging structures must be added.



Corners with an obtuse-angled design
Staggered connection

Simple diagonal corner



Diagonal strip of bricks laid on edge, also suitable as a channel

Three-row diagonally paved strip, also suitable as a channel

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