



GRASPOINTNER
Sustainable innovation.



Arrive
safer and
sounder.

BG-ROAD

LEFIX® shoulder slabs
LPF reflector post bases
VZF traffic sign bases

Traffic systems

Experience greater **safety** and **efficiency.**



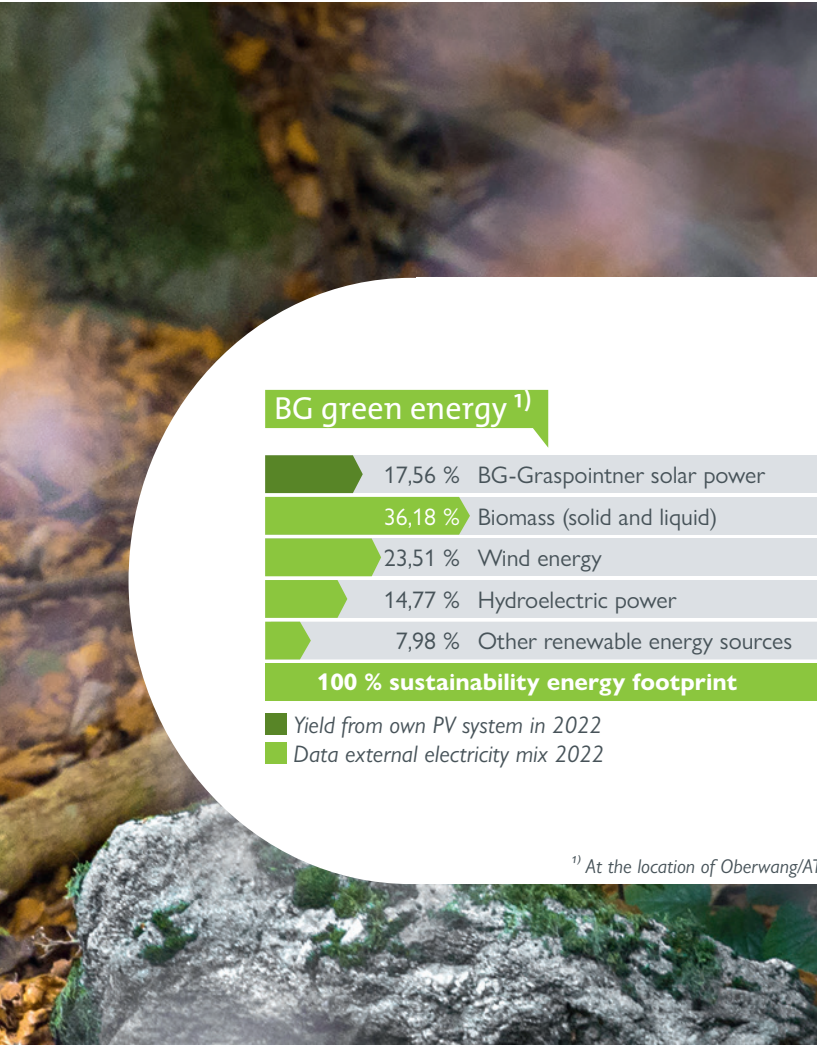
**Better roads ... every hour, every day.
Discover our traffic systems.**

Roads are the lifelines of every community. They have to be kept passable at all times: 365 days a year, 7 days a week, 24 hours a day.

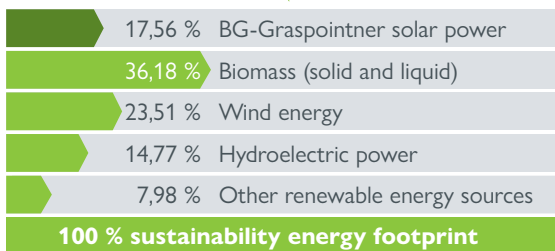
Our traffic systems ensure that your community's transport infrastructure stays in permanent working order, and what's more: the sophisticated designs of our shoulder slabs, bases and reflective products and the innovative materials they are made of, afford optimised road safety and efficiency.



GRASPOINTNER
Sustainable innovation.

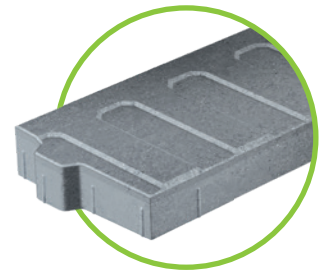


BG green energy ¹⁾



■ Yield from own PV system in 2022
■ Data external electricity mix 2022

¹⁾ At the location of Oberwang/AT



BG-ROAD LEFIX®
shoulder slabs pp. 4 – 13



BG-ROAD Reflector post
bases pp. 14 – 17



BG-ROAD traffic sign bases
pp. 18 – 19

When sustainability is the guiding principle.

Sustainability is a core element of our corporate culture. This is reflected in the materials used and in the production processes. When it comes to our production, we rely on an environmentally extremely friendly energy mix for production and avoid using fossil fuels to the greatest extent possible.

Environmental protection is a priority in the production process, as evident in the raw materials we use and our waste avoidance methods. In line with these practices, we have implemented an environmental management system in accordance with ISO standard 14001.



Unsurpassed **stability** meets lasting **cost-efficiency.**

Traffic volume, and thus the burden on our roads, increases every year. Increasing truck traffic poses a major challenge to maintaining roadway stability. This means rising road maintenance costs and greater safety risks. Because road damage poses a dangerous accident hazard.

Safer and more durable: BG-ROAD LEFIX® shoulder slabs.

BG-ROAD LEFIX® shoulder slabs effectively stop this development, as their design prevents shoulder loosening, with a stable surface structure that affords easy steering correction. They reduce road shoulder wear so less maintenance is required, yielding lower maintenance cost. The 'rumbling' sound made when driven over the edge of the road alerts drivers, enhancing safety.

Abrasion-proof: Two-layer design

The shoulder slabs have concrete facing for a smooth, rust-resistant and abrasion-resistant top surface.

Safety-enhancing: Rumble effect

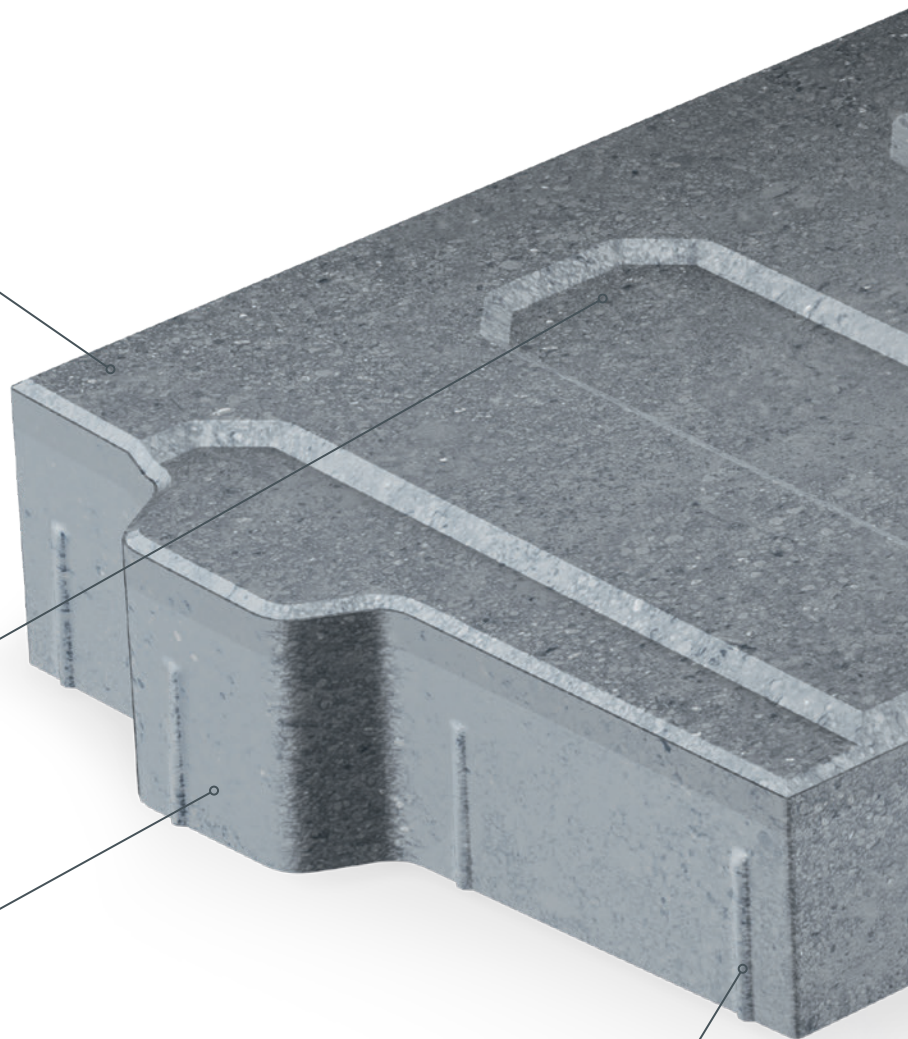
A grooved profile makes a rumbling noise when driven over, alerting drivers that they have reached the edge of the road.

Practical: Interlocking design

Frontal interlocking teeth make the slabs grip together so they cannot be displaced, affording easier installation as well.

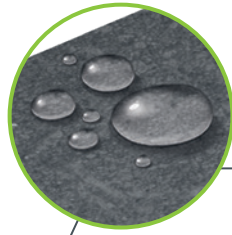
Convenient: Spacing aid

Spalling protection for transport and installation.



BG-ROAD LEFIX[®]

Shoulder slab



Hydrophobic surface

For purchase quantities in excess of 500 linear metres, a full-surface, water-repellent impregnated finish can be applied to the shoulder slab surface.

Clean: Drainage grooves

The grooved profile controls the flow of surface water, thus avoiding the type of slab lifting that would otherwise typically occur.

THE ORIGINAL:

BG-ROAD LEFIX[®] shoulder slab

More informationen at: www.say.bg/en/lefix

CE



Variable: Reflector post slot

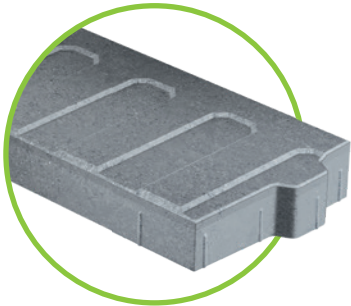
An optional slot makes for easy installation and replacement of reflector posts.

The benefits at a glance:

- Laid together, the length-wise side of BG-ROAD LEFIX[®] slabs form a continuous border of support for the edge of asphalt roads
- Easy to lay, virtually maintenance-free
- Replaces shoulder gravel, keeping the road surface clear
- Greater traffic safety for lorries, cars and two-wheelers
- Designed for winter road services: 3 % outward surface gradient

BG-ROAD LEFIX®

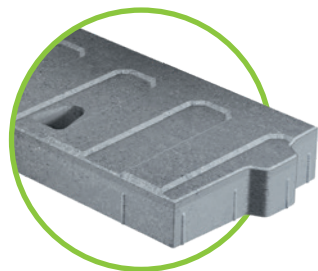
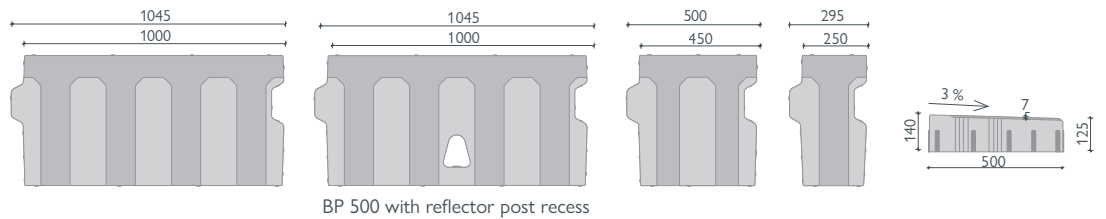
Shoulder slabs



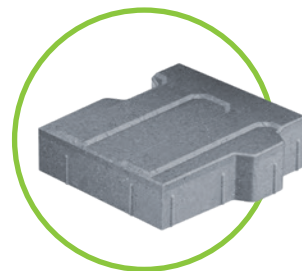
BG-ROAD LEFIX® shoulder slab BP 500 – grey

Shoulder slab made of concrete C 30/37

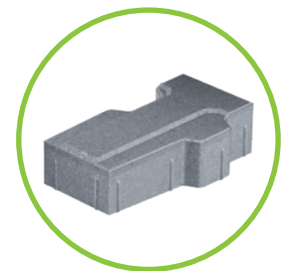
Item no.	Type	L / W in mm	Laying radius minimum	Weight/ pc.	Pcs./ pallet
57004	LEFIX® shoulder slab BP 500	1000/500	> 16 m	149 kg	8
57000	LEFIX® shoulder slab BP 500 with recess ²⁾	1000/500	> 16 m	145 kg	8
57006	LEFIX® shoulder slab BP 500	450/500	> 6 m ¹⁾	65 kg	16
57008	LEFIX® shoulder slab BP 500	250/500	> 4 m ¹⁾	36 kg	24
57045	LEFIX® shoulder slab BP 500, hydrophobic ³⁾	1000/500	> 16 m	149 kg	8
57055	LEFIX® shoulder slab BP 500 with recess, hydrophobic ³⁾	1000/500	> 16 m	145 kg	8
57046	LEFIX® shoulder slab BP 500, hydrophobic ³⁾	450/500	> 6 m ¹⁾	65 kg	16
57047	LEFIX® shoulder slab BP 500, hydrophobic ³⁾	250/500	> 4 m ¹⁾	36 kg	24



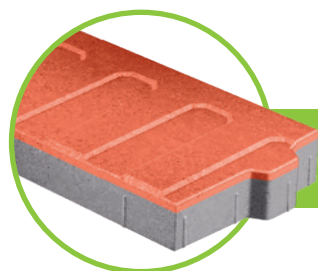
Reflector post slot



BG-ROAD LEFIX®
shoulder slab 450/500



BG-ROAD LEFIX®
shoulder slab 250/500



i Our BG-ROAD LEFIX® shoulder slab is also available in colour, on request, for orders exceeding 500 linear metres.

¹⁾ Data applies to internal radii.

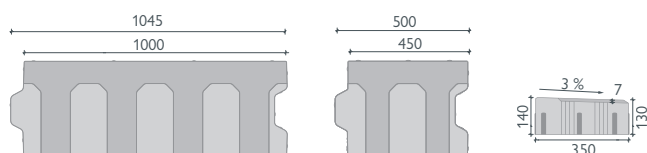
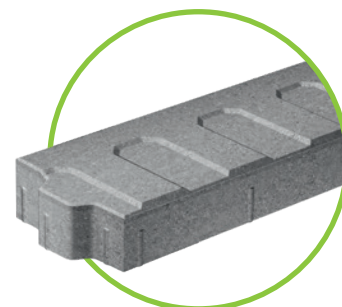
²⁾ Reflector post slot – 1 slot per slab.

³⁾ Contact us for delivery time and availability – min. order quantity 500 lfm.

BG-ROAD LEFIX® shoulder slab BP 350 – grey

Shoulder slab made of concrete C 30/37

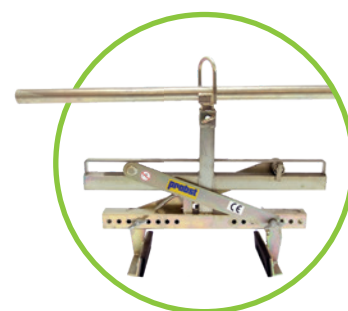
Item no.	Type	L / W in mm	Laying radius minimum	Weight/ pc.	Pcs./ pallet
57001	LEFIX® shoulder slab BP 350	1000/350	> 16 m	107,0 kg	12
57024	LEFIX® shoulder slab BP 350	450/350	> 6 m	48,0 kg	12
57051	LEFIX® shoulder slab BP 350, hydrophobic ³⁾	1000/350	> 16 m	107,0 kg	12
57052	LEFIX® shoulder slab BP 350, hydrophobic ³⁾	450/350	> 6 m	48,0 kg	12



Accessories

for BG-ROAD LEFIX® shoulder slabs

Item no.	Type
80017	LEFIX® shoulder slab lifting grab, max. load capacity 250 kg, grabbing area: 55 – 535 mm



NEW CONSTRUCTION

1. Lay permanent load-bearing road bed conforming with applicable road construction regulations and the requirements for the expected load classes.
2. When laying the BG-ROAD LEFIX[®] shoulder slab on a concrete sub-base (min. C 20/25 and suitable exposure class), make sure that the shoulder slabs are fully bedded.
3. The road surface (bituminous wearing course, concrete pavement, etc.), must be applied flush with the shoulder slabs.
4. A joint width of 3 – 5 mm must be maintained between the BG-ROAD LEFIX[®] shoulder slabs. Do not lay the slabs too close together. The joints must be filled with suitable permanently elastic grout (not mortar jointing) to eliminate any plant growth and ensure permanent slab connection and grip.

REPAIR

1. Trim the road edge to create a clean connection line and be able to properly remove damaged road surface.
2. Remove old shoulder material.
3. Lay permanent load-bearing road bed conforming with applicable road construction regulations and the requirements for the expected load classes.
4. When laying the shoulder slabs on a concrete sub-base (min. C 20/25 and suitable exposure class), make sure that the shoulder slabs are fully bedded. Back-end support is to be created (min. thickness 15 cm). To ensure a good grip to the finished element, the base and back-end support concrete must not already be set at the time of installation.
5. The road surface (bituminous wearing course, concrete pavement, etc.), must be applied flush with the shoulder slabs.
6. The joints between the cut road edge and the shoulder slabs must be filled with suitable poured material (poured asphalt, cold asphalt, etc.). A joint width of 3 – 5 mm must be maintained between the shoulder slabs. Do not lay the slabs too close together. The joints must be filled with suitable permanently elastic grout to eliminate any plant growth and ensure permanent slab connection and grip.

General information on laying and installation

1. Suitable tools (e.g. BG lifting grab, vacuum lifting device, etc.) and matching lifting equipment (e.g. truck crane, excavator, etc.) should be used to lay the BG-ROAD LEFIX[®] shoulder slabs.
2. The road surface should permanently be at least 7 – 10 mm higher than the surface of the BG-ROAD LEFIX[®] shoulder slabs where they meet so as to avoid any mechanical damage (during snow clearing, for example) and ensure water drainage.
3. Driving when there is no road surface layer (such as fine asphalt covering during construction) must not be allowed so as to prevent the BG-ROAD LEFIX[®] shoulder slabs from being damaged.

4. The BG-ROAD LEFIX[®] shoulder slabs widen the roadway while protecting the road edge near the shoulder. The shoulder slabs should not be regularly driven on.
5. The reflector post insertion holes must be kept free, and deepened as required.

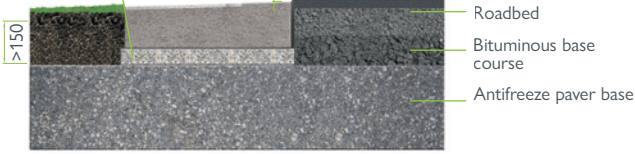


The installation drawings are generally applicable examples. Details and further information on our homepage www.bg-graspointner.com. For special installation requirements, you can also contact our application engineering directly – office@bg-graspointner.com

STANDARD INSTALLATION

Shoulder slabs in grit bed

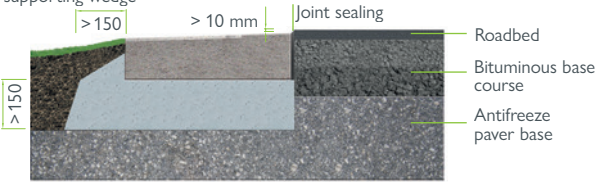
appr. 5 cm grit 5/8 > 10 mm Joint sealing



FOR SPECIAL REQUIREMENTS

Shoulder slabs in concrete sub-base

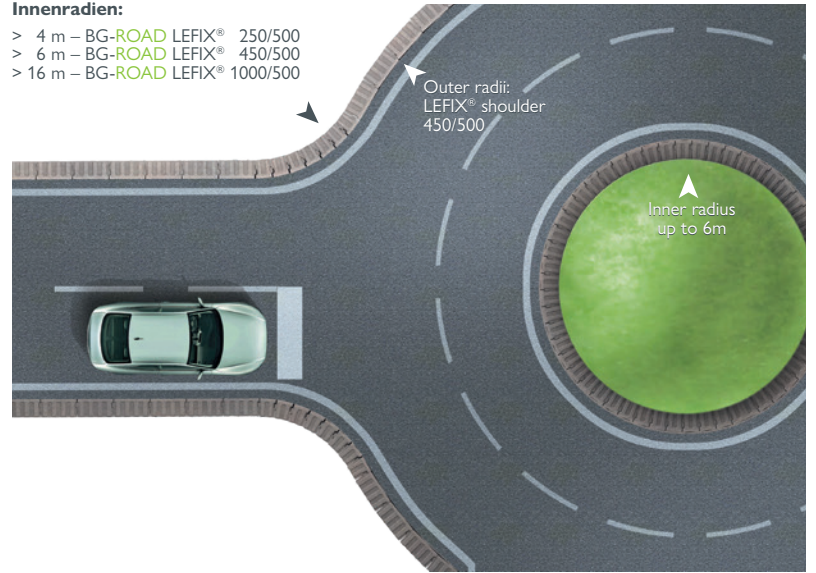
Concrete foundation incl. supporting wedge



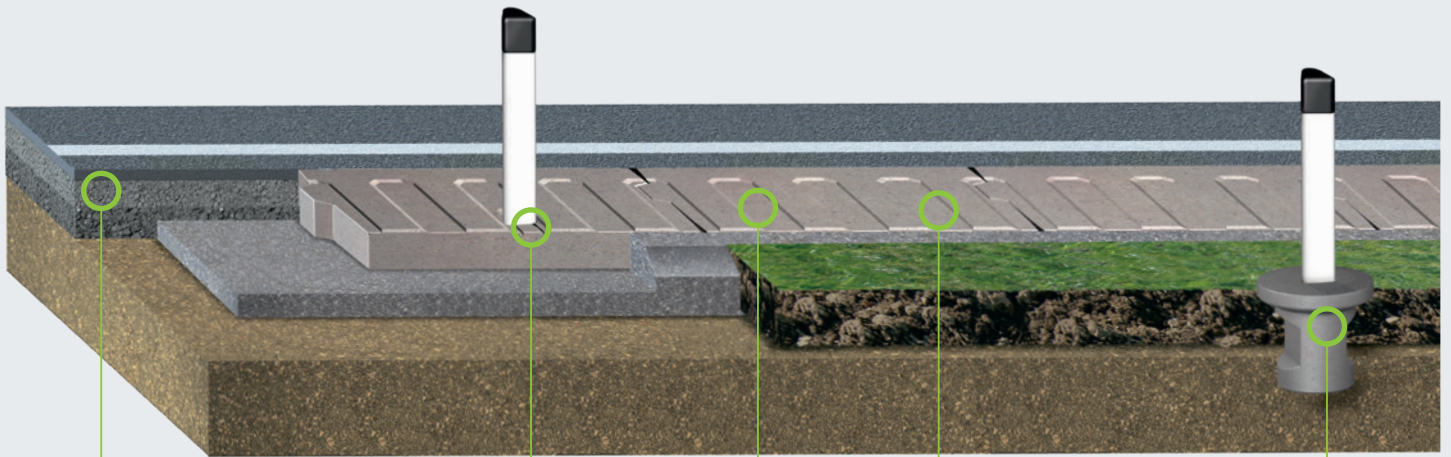
BG-ROAD LEFIX® shoulder slab

Innenradien:

- > 4 m – BG-ROAD LEFIX® 250/500
- > 6 m – BG-ROAD LEFIX® 450/500
- > 16 m – BG-ROAD LEFIX® 1000/500



Laying example: Roundabout with different radii



Additional supports are created for the roadway to prevent the road edge from breaking away

The reflector post can be inserted directly into the specially provided slot as needed

The grooves create a rumbling noise that alerts drivers that they have reached the end of the lane

The grooves control how the water drains off, thus preventing any water intrusion

BG-ROAD reflector post bases provide a stable and non-twisting foundation

Project report:

Properly secure the wayside.

Road verges need a lot of maintenance and incur high running costs. Through the K 2098 project Lohmühle-Stangenbach, near Heilbronn, a sustainable solution came to fruition that not only made the hard shoulder safer but also enabled extensive savings to be made.

(image 1).

There's always trouble on the roadside

Road verges are essential – but expensive to maintain. Firstly, the shrubbery has to be cut back on a regular basis to ensure that nothing is blocking the view, and to prevent water from collecting. In addition, dirt and vegetation debris have to be removed. And if there is loose rubble, the road surface has to be cleaned and the verge re-filled and re-compacted. Grass pavers can equally be discounted as a long-lasting option where extensive bends occur along the hard shoulder. However, there is one solution that is gradually becoming widely accepted and ensures that roadsides remain safe and clean while saving on maintenance costs in the long run: BG-Graspointner's BG-ROAD LEFIX® shoulder slabs. Using the restoration project of district road K 2098 Lohmühle-Stangenbach as an example, we will explain the improvements the product brought to the 1,300-metre stretch of road.

Trouble spot

The section of the road passes through a forest area. There is rock on one side of the road, and a sloping embankment on the other side. Since the road was only around five meters wide before the restoration, drivers were forced to swerve onto the verge – which started to slide off to one side. As a consequence, the road surface lost stability and started to crack.

Thomas Conrad from the construction department of Heilbronn district council is familiar with the BG-ROAD LEFIX® shoulder slabs. He has already used them on five construction projects that he has contracted out, planned and realised. "This product is perfect for the K 2098 project. A full extension would have been possible as an alternative, but this would have cost about two million euros for 1,300 metres of road," says Conrad. This would not have been justifiable for a traffic flow of 300 vehicles per day (plus bus traffic). By using BG-ROAD LEFIX® shoulder slabs, the overall costs only amounted to around 400,000 euros. Running costs: zero.

(No) Alternatives

The technician from Heilbronn knows the options available for road verge construction. "Rubble verges are out of the question as they would start sagging after a short period of time. Some projects use grass verges. However, they don't provide the smooth connection to the asphalt road surface, which means the construction will become unstable sooner or later. Grass pavers will sag or break at some point." BG-Graspointner's solution is as simple as it is ingenious: sturdy shoulder slabs made from high-density C 30/37 concrete capable of resisting freezing as well as thawing with de-icing salts to ensure long-lasting stability and safety. Conrad: "The vehicle-accessible BG-ROAD LEFIX® shoulder slabs are uniquely suited to reinforcing the roadside; the continuous length reinforces the asphalt edge and ensures stability in the long run – even on the embankment."





Getting to work

Thomas Conrad planned the project in January 2020. The call for tenders took place in January and February, and the project started on April 20. Drillings confirmed the stability of the existing surface.

Therefore, Conrad decided to resurface – in other words: reconstruct – the road (image 2). The asphalt was only milled off in the two connecting points (image 3). *“This produces less debris, which significantly lowers the costs. After all, the disposal of potentially contaminated material is particularly expensive.”*

The costs per running metre of BG-ROAD LEFIX® shoulder slabs for this project amounted to roughly 100 to 150 euros, including the excavation work, disposal, concrete sub-base, installation and slabs.

After milling the connecting points, a concrete bed (80 cm wide) was installed along the entire stretch, along with reinforcement mesh to ensure that the BG-ROAD LEFIX® shoulder slabs were connected securely to the asphalt (image 4).

The reconstruction of the road surface consisted of an eight-centimeter base plus four centimeters of top layer. Then the ground was brought in line with the embankment.

And it's done!

The road construction project, including 50 cm-wide, solid and safe shoulder slabs, was completed after only nine weeks (image 1). Now, drivers can avoid oncoming traffic by safely swerving onto the shoulder without jeopardising its stability. According to Conrad, an extension of the entire road would have taken at least six months. With – even longer with downhill retaining structures.



Perfect fit

Thomas Conrad: “Nothing is going to slip off on this stretch. The shoulder slabs are the ideal solution for two-way traffic on narrow district roads. They are positioned at asphalt level and safely and reliably secure the side of the road.” If you factor in how much lower the modernisation costs and construction time are compared to what is required for an extension of the entire road, then the BG-ROAD LEFIX® shoulder slabs more than pay for themselves. A gravel verge may be cheaper to start with, but it will incur additional high maintenance costs in the long run. And these are anything but cheap. Thomas Conrad estimates these to be 10,000 euros in the first six months for this stretch of road. Then the side strip has become solid and maintenance costs amount to 200 euros per month.



Durable and safe for traffic

Another benefit that comes from using BG-ROAD LEFIX® shoulder slabs is the rumbling sound that sets in when the vehicle drives over the slabs, thus alerting the driver: “Attention! Roadside verge ends!” The solid surface structure, which runs level to the road surface, additionally gives drivers a chance to easily adjust their steering. With a grooved surface as well as a cross-section with an outward-running 3 % slope, the BG-ROAD LEFIX® shoulder slabs additionally provide for the ideal drainage capabilities while also preventing water discharge and posing no issues whatsoever when it comes to winter road services. Conrad expects the road surface layer to last 15 years. The broadening is designed to last 30 years. Developed by BG-Graspointner, BG-ROAD LEFIX® shoulder slabs have been selling successfully on the market for over 16 years.

The **right solution** for a long service life



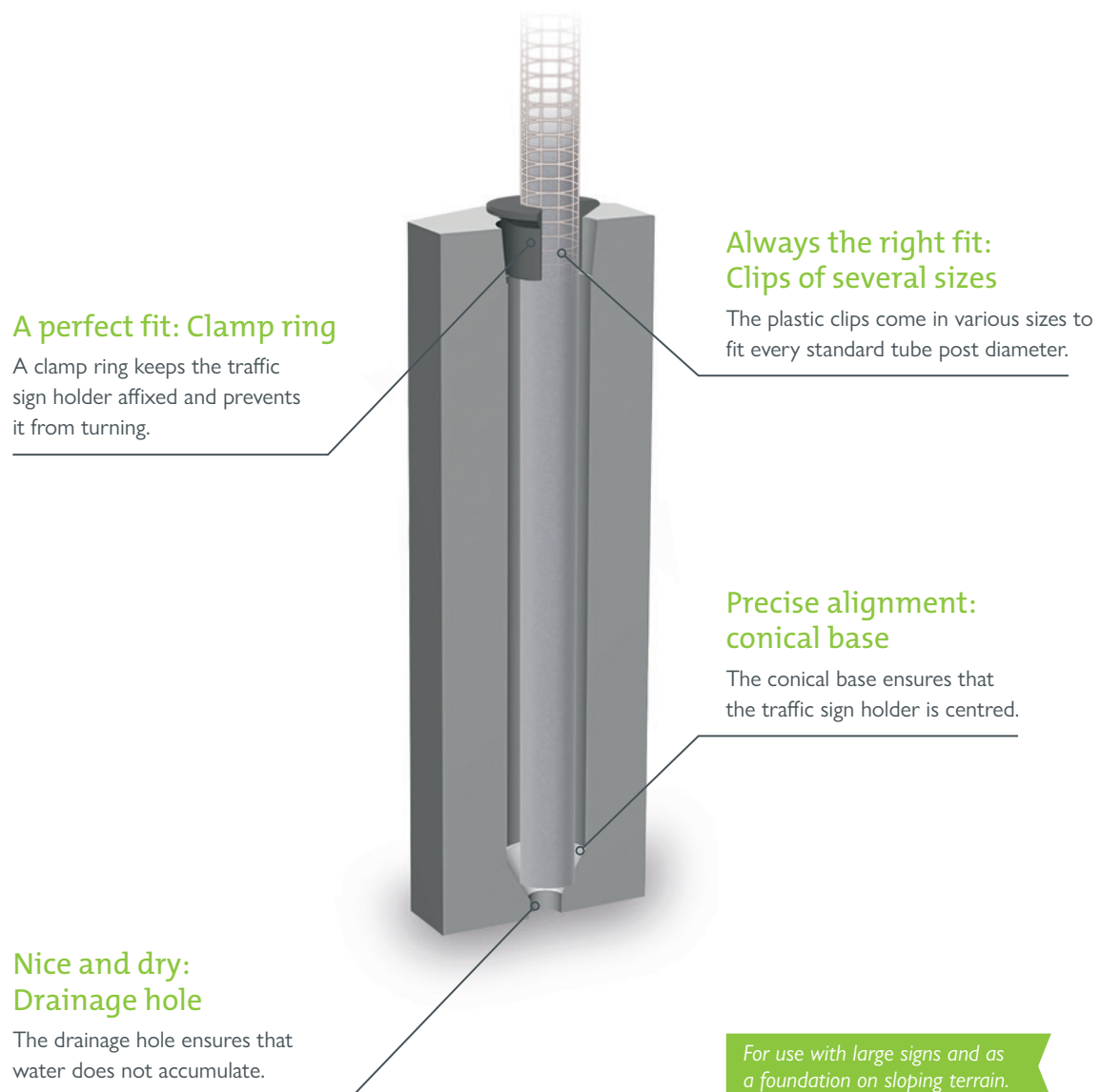


Focused on **safety:** our **bases** for **traffic elements.**

Safety-relevant traffic elements, such as reflector posts and traffic signs, are exposed to wind and weather day and night, but also other mechanical influences. Which is why they require a particularly solid bedrock. Our BG-ROAD traffic system bases deliver the ideal footing as well as anti-twist protection.

Stability meets flexibility.

What's more, every traffic element is exceptionally easy to maintain and, in spite of their sturdy anchoring, easy to replace. Reflector posts can be inserted and removed in no time. The plastic clip housed in the traffic sign base makes installing and/or removing the signs child's play: all it takes is a tyre lever. An ideal combination of safety and efficiency.



The benefits at a glance:

- Stable, non-turnable bases
- For reflector posts with and without snow rod
- No reflector post and traffic sign tilting
- Reflector posts and traffic signs replaceable at any time
- Mechanically movable (reflector post bases only)

Protected surface: No grass growth

A large surface (38 cm diameter) effectively prevents growth of grass and weeds.

Snug fit: Insertion opening with clamp bar

The design ensures a precise hold for the reflector posts.

Cleaner: Domed, convex surface

A domed design is favorable for keeping off dirt.

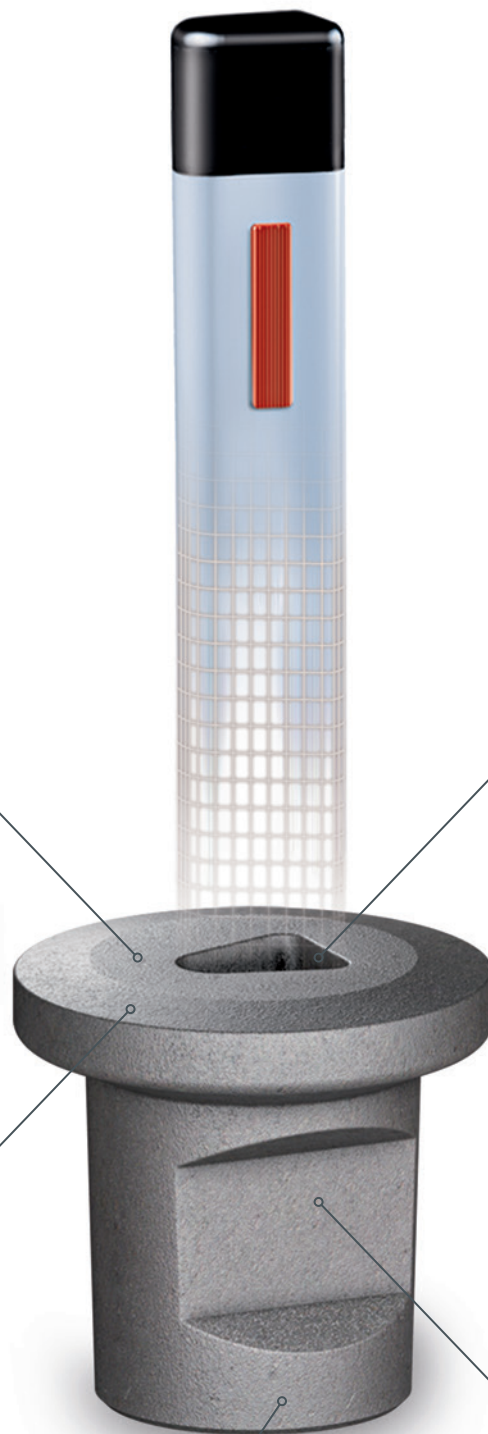
Lightweight construction: unique shape

Due to the stability of the material, less material can be used for lighter weight, and the design also makes handling and installing easier.

Stable connection: Profiling

Special profiling ensures stable anchoring in the substrate.

The base can also be installed mechanically using a hydraulic ram or auger.



BG-ROAD LPF

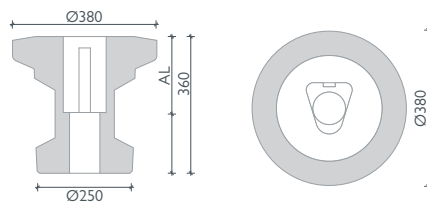
Reflector post bases



BG-ROAD reflector post bases LPF-O

Reflector post base made of C 25/30 concrete
Snow rod insertion opening approx. 80 mm

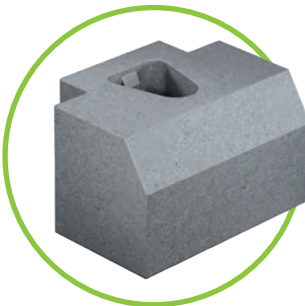
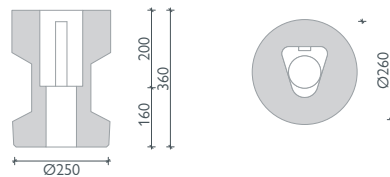
Item no.	Type	Ø/H in mm	Anchoring length (AL)	Weight/ pc.	Pcs./ pallet
58000	Reflector post base LPF-O	380/360	200 mm	42 kg	20



BG-ROAD Reflector post base LPF-3N

Reflector post base made of C 25/30 concrete
Snow rod insertion opening approx. 80 mm

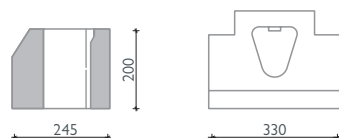
Item no.	Type	Ø/H in mm	Anchoring length (AL)	Weight/ pc.	Pcs./ pallet
58001	Reflector post base LPF-3N	260/360	200 mm	35 kg	24



Reflector post base LPF-R2

Reflector post base made of C 25/30 concrete
Snow rod insertion opening approx. 80 mm

Item no.	Type	L/W/H in mm	Anchoring length (AL)	Weight/ pc.	Pcs./ pallet
58002	Reflector post base LPF-R2	330/245/200	200 mm	28 kg	36



References



BG-ROAD VZF

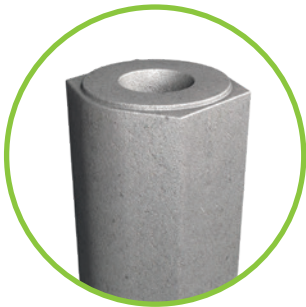
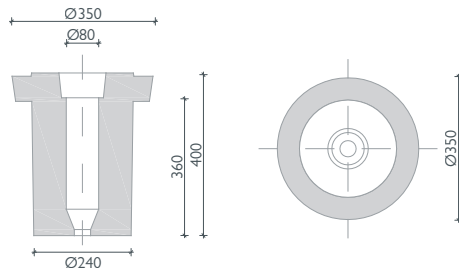
Traffic sign bases



BG-ROAD traffic sign base VZF-S

Traffic sign base made of C 25/30 concrete
Slot for traffic sign **approx. 80 mm**

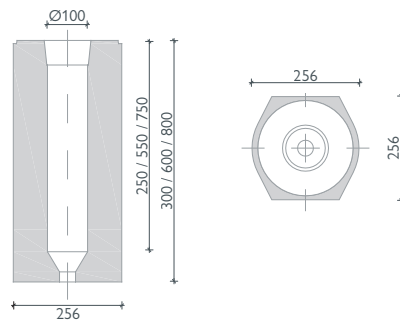
Item no.	Type	Ø/H in mm	Insertion depth approx.	Weight/ pc.	Pcs./ pallet
58100	Traffic sign base VZF-S	350/400	360 mm	44 kg	22



BG-ROAD Traffic sign base VZF-XS, M, L

Traffic sign base made of C 25/30 concrete
Slot for traffic sign **approx. 100 mm**

Item no.	Type	Ø/H in mm	Insertion depth approx.	Weight/ pc.	Pcs./ pallet
58103	Traffic sign base VZF-XS	256/300	250 mm	37 kg	24
58101	Traffic sign base VZF-M	256/600	550 mm	78 kg	12
58102	Traffic sign base VZF-L	256/800	750 mm	104 kg	8



Accessories

for BG-ROAD traffic sign bases

Item no.	Type	for tube Ø (mm)	Weight/ pc.
58150	Clamp ring XS-S-M-L	48	0,25 kg
58151	Clamp ring XS-S-M-L	60	0,25 kg
58152	Clamp ring XS-S-M-L	76	0,25 kg
58153	Clamp ring XS-M-L	90	0,25 kg

References





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Sustainable innovation.

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Your partner for BG-Graspointner traffic systems