

The mobile steel barrier for highest demands



Complies with
the requirements
of **DIN EN 1317-2** up
to **containment level H2**.

VARIO GUARD®

Trend-setting safety

Flexible solutions...



Protection of carriageway crossover points zone A and E

As an efficient combination of protection and routing facility **VARIOGUARD** makes a considerable contribution to traffic safety in black spots like carriageway crossover points at day- and nighttime.

The system complies with the requirements of DIN EN 1317-2 up to containment level H2.

This way it guarantees the containment capacity and the protection that should be required in these areas.

Furthermore **VARIOGUARD** provides the necessary optical visibility at nighttime that is characteristic for modern steel barriers.



Protection against oncoming traffic

For roadways with a dangerous traffic routing **VARIOGUARD** is the ideal protection. Because of its high flexibility concerning areas of application the system enables any reasonable traffic routing. Since the lower part of the system is drivable the road marking can be directly applied on the foot section (e.g. in case of narrow space conditions). The additional equipment of the system with plug-on bollards as well as certified reflectors of high quality on both sides of the upper section provides a good visibility of the routing, even in darkness and in rainy and foggy weather.



Protection of work zones

In work zones **VARIOGUARD** provides protection for both the workforce and the travelling public. The small planning width of the system (400 mm) and the drivability of the foot section lead to a decrease of the working width and thereby to an enlargement of the lane in the work zone area.

Protection of workforce zone A and B

Roadworks and reconstructions of the pavement often require a removal/disassembling of the existing guardrail system. To protect these hazardous areas [VARIOGUARD](#) is the ideal system.



Permanent protection of accident black spots

The excellent protection and guiding function of [VARIOGUARD](#) at day- and nighttime reduces accidents in extremely hazardous areas considerably. Head-on collisions are practically impossible. Two of the main features of [VARIOGUARD](#) are its mobility and deformability. In case of an accident most of the impacting energy is absorbed by the system. The vehicle is smoothly decelerated and redirected under control. The result: less strain for the occupants during the impact and protection of the oncoming traffic at the same time.



Permanent safety barrier

In case of limited space, e.g. on bridges, where common guardrail systems cannot be installed, [VARIOGUARD](#) single-sided can be applied. The system has a construction width of 430 mm and is fixed to the pavement with either earth pins or chemical anchors. The dimension of the anchoring is determined acc. to DIN 1072.

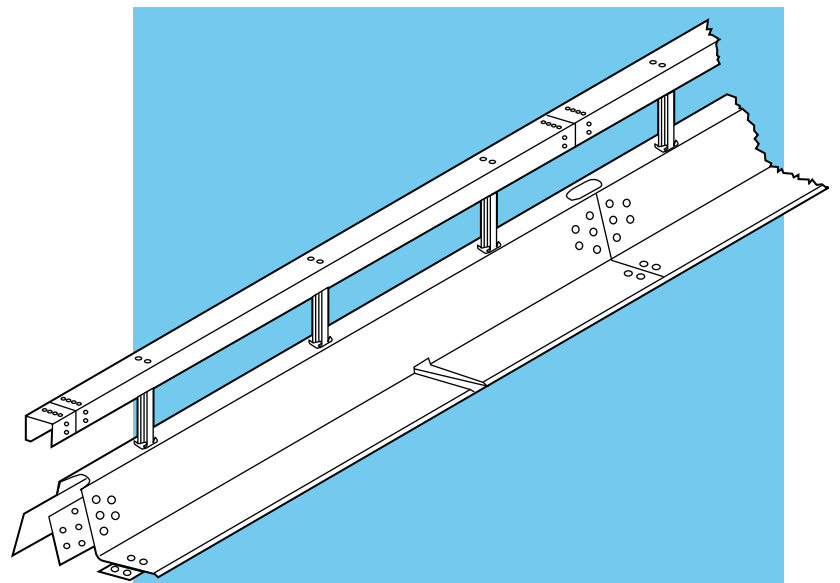


Technology

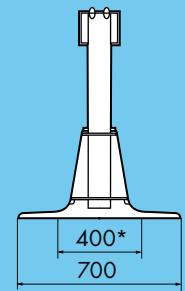
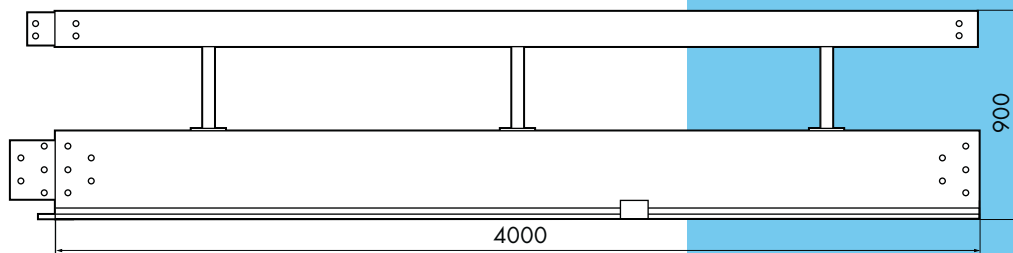
Intelligent safety-technology

The system

VARIOGUARD is a mobile, hot-dip galvanized steel safety barrier, which is pre-fabricated in single elements. It consists of 4000 mm long, trapezoid body elements (base width: 700 mm) with a foot section on both sides (width: 200 mm each). Sigma posts on top of the unit (post distance: 1333 mm) connect the body elements to a box beam. Together with the box beam the overall height of the system is 900 mm. The standard element has got a weight of approx. 400 kg and is



standard element

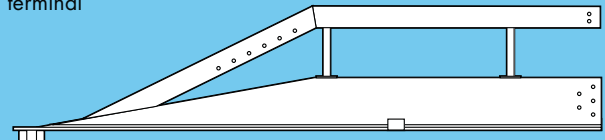


equipped with an integrated drainage section for water (cross section: 120 mm x 70 mm). With the foot section on both sides **VARIOGUARD** has a planning width of 400 mm acc. to TL-mobile protective devices 97.

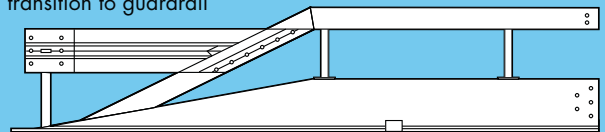
The construction

The **VARIOGUARD** elements are connected either by bolts or by quick joints. The system is installed unfixed to the ground. It is anchored at the beginning and at the end of the section or mechanically linked to existing guardrail systems. The system is anchored either by post sleeves / insertion posts, by earth pins or by dowels. **VARIOGUARD** can be linked to existing guardrail systems as well as to MiniGuard or to concrete barriers. On bridges expansion joints can be used.

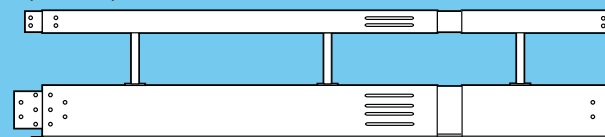
terminal



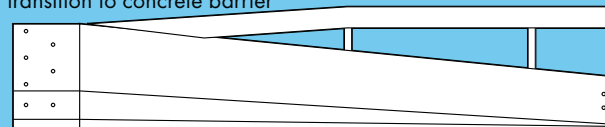
transition to guardrail



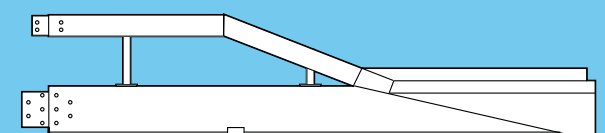
expansion joint



transition to concrete barrier



transition to MINI-GUARD



Project procedure

Consultancy

Our experienced and competent consultants develop tailor made and cost-saving solutions on the basis of your individual problems. Apart from buying the system **VARIOGUARD** can also be rented.

Planning

During the planning phase the course is set for a successful execution of the project. Time schedule and progress of the work zone have to be committed and coordinated among all involved parties.

Necessary special elements/accessories are determined. For complex projects this certainly includes assistance on-site.

Transport

The space-saving packing of the pre-assembled elements of up to 12 m length allows high transport capacities (up to 200 m per truck) and cost-saving logistics.

Installation

A maximum of road safety is associated with a minimum of disruption to the traffic flow during the installation. This is assured by fast installation in small space. A single installation team achieves daily assembly outputs of up to 2500 m.

Maintenance

Typical accidents cause no or only minor damage to the system, which can be repaired quickly and easily. During the crash tests neither breaks nor major damages could be determined. **VARIOGUARD** shows no tendency to turn over.

Refitting

Extensive road works very often require changing traffic routings during the project. Here highest demands are made on modern safety barrier systems. High application flexibility and quick refitting are the key to success. Both are combined by **VARIOGUARD** in an excellent manner.

Disassembling

VARIOGUARD is easy to disassemble and can be removed very quickly.

Storage

Due to the space-saving packing the storage of the elements is very economical. 1000 m of **VARIOGUARD** e.g. only require a space of 100 m².



Certified safety



VARIOGUARD was successfully tested at the test-house L.I.E.R. in Lyon/France in 1995 (TB 11 & TB 51) acc. to DIN EN 1317-2. The results were regarded as "very good".



VARIOGUARD re-directs the impacting vehicles relatively smoothly. This way a controlled deceleration can be achieved. Since the foot section of **VARIOGUARD** is drivable the weight of the vehicle stabilises the system.



Neither the vehicles nor the **VARIOGUARD**-system show any tendency to turn over. The de- and acceleration values directly affecting the occupants during the crash are within tolerable limits.



Cars and buses are re-directed in a very low angle. The small damages to the system can be easily fixed. The vehicles also show only minimal damages.



Conclusion: containment level H2 acc. to DIN EN 1317-2 is fulfilled

"Very good behaviour of the barrier, which re-directed the vehicle correctly."

containment level acc. to DIN EN 1317-2	test	vehicle	km/h	angle	kg	results	
						working width	acceleration severity index (ASI)
T3*	TB 21	PKW	80	8	1300	W3	A
	TB 41	LKW	70	8	10000		
T3	TB 21	PKW	80	8	1300	W4	A
	TB 41	LKW	70	8	10000		
N2	TB 11	PKW	100	20	900	W6	B
	TB 32	PKW	110	20	1500		
H1	TB 11	PKW	100	20	900	W7	B
	TB 42	LKW	70	15	10000		
H2	TB 11	PKW	100	20	900	W8	B
	TB 51	Bus	70	20	1300		

***VARIOGUARD** with quick-joint

VARIOGUARD Therefore VarioGuard fulfils even higher containment levels as required for the protection of work zones (acc. to ZTV-SA 97). Consequently VarioGuard can also be implemented as a permanent safety barrier with a higher containment level.