

The Kohlhauer product range includes:

Transparent noise protection

- Clearwall®
- Clearwall HS
- Soundgard TOP®
- Plexiglas Soundstop® GS CC
- Perspex™ Clearview

Systems

- Frames
- Posts
- Accessories

Opaque noise protection

- Wooden systems
- RockDelta® Green

Photovoltaics with noise protection

- opaque
- semi-transparent

Noise-absorbing. With best prospects.

Transparent, highly absorbing noise protection systems with view and glare protection.



Clearwall®
Clearwall HS



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K O H L H A U E R



**An innovative solution.
For a new generation
of noise protection systems.**

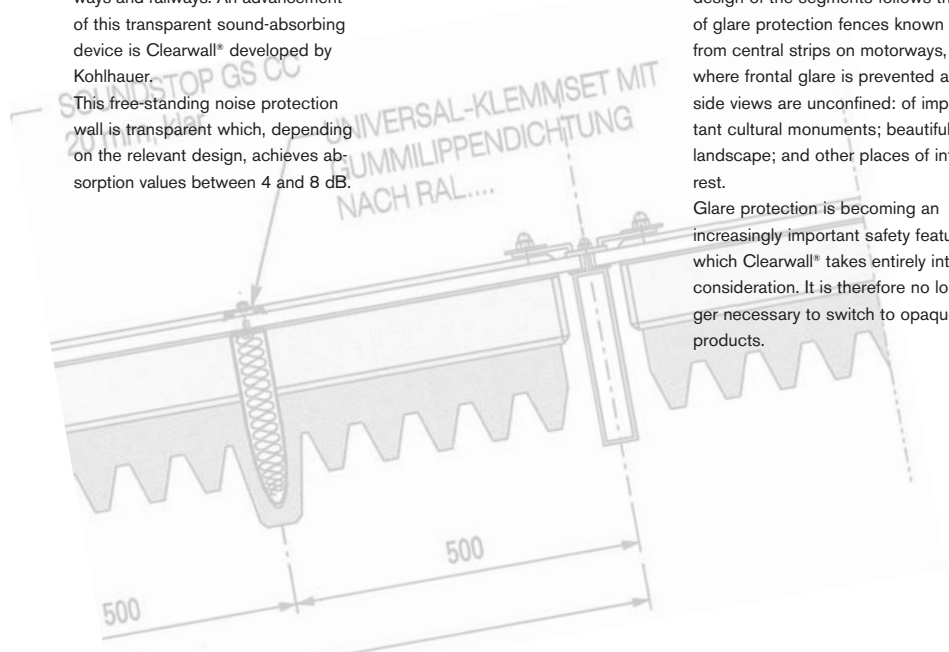
A licensee of transparent absorbing side windows, Kohlhauer, since 1992, is already working on the patented system for encasing motorways and railways. An advancement of this transparent sound-absorbing device is Clearwall® developed by Kohlhauer.

This free-standing noise protection wall is transparent which, depending on the relevant design, achieves absorption values between 4 and 8 dB.

Brilliantly designed, but not glaring.

Kohlhauer's Clearwall® is used where glare is to be avoided. The design of the segments follows that of glare protection fences known from central strips on motorways, where frontal glare is prevented and side views are unconfined: of important cultural monuments; beautiful landscape; and other places of interest.

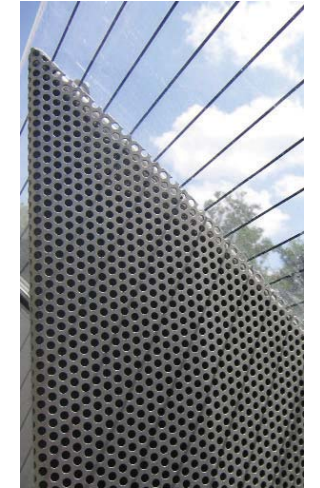
Glare protection is becoming an increasingly important safety feature, which Clearwall® takes entirely into consideration. It is therefore no longer necessary to switch to opaque products.



So far, noise-absorbing and transparent sound protection has not always proven to be successful. Is it possible to change that?

**Clearwall®.
Of course!**

This modular system combines transparent sound protection elements that are made of polycarbonate, acrylic glass, silicate glass or other transparent materials with a well thought-out lamella design as well as a base below the sight area absorbing the sound. Clearwall® can be adapted to individual requirements in terms of aesthetic and functionality with lamellas that can be arranged crosswise or lengthwise at base height. This provides a wide choice of adaptable sound protection elements that can be used efficiently railways and roads and can even be combined with photovoltaic elements.



Few points of attack for graffiti.

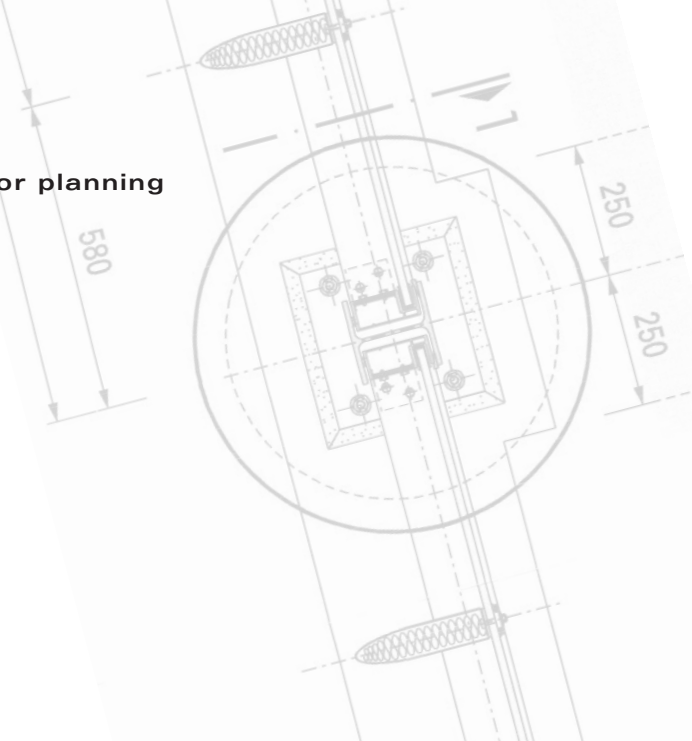
The way in which lamellas are arranged makes the surface unattractive to sprayers. Furthermore, coating systems are available that prevent spray colours from sticking to the surface thus making it easy to remove these and ensure transparency.

Outstanding features at a glance:	
Acoustical absorption, depending on the design	4 - 8 dB
Sound absorption of the sheets of glass	29 - 33 dB
Complies with requirements according to specification	ZTV-Lsw 88
Lamella design prevents glare (especially on motorways), without restricting view	
Bird protection taken into account	
Graffiti protection/anti-graffiti coating	
Emergency and service doors can be integrated	
Can be combined with photovoltaic elements	
Less reflexion offers more visual transparency	
Less soiling through lamellas' "slipstreams"	

Optimal conditions for planning and implementation

The design

Clearwall®, the transparent noise protection wall, is basically filled on a concrete base with a height of 100 cm. The transparent sheets of glass are mounted directly onto the base. Special supports integrated at distances of 2 - 4 m are visually almost equal to the lamella shape, thus matching the entire design in a harmonious way. In this way, from a design point of view, a calmer picture is created than with conventional systems.



Technical Data

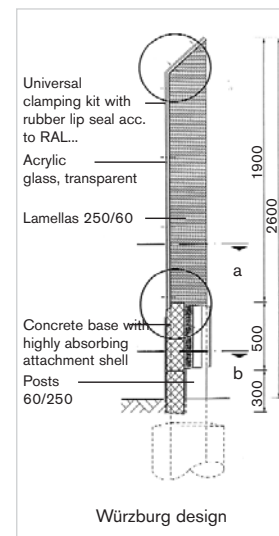
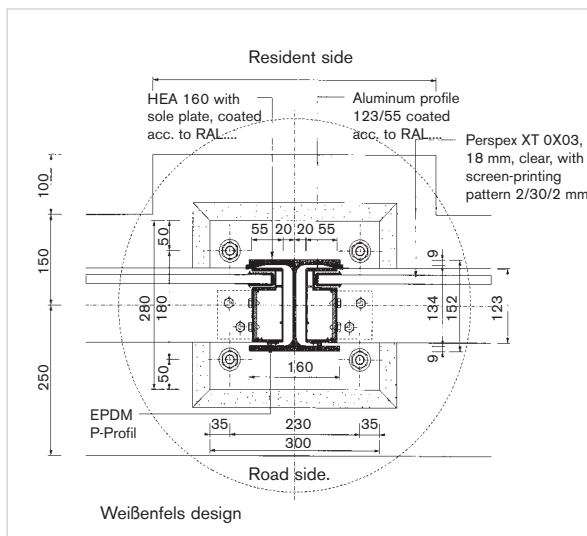
Field lengths	Standard 4.00 m (7 x 0.57 m combination of sheets of glass/lamellas). Shorter field lengths possible on request.
Total height	Can be selected in technically standard and desired dimensions
Base	Standard 100 cm, in concrete, wooden concrete or RockDelta® design. Further heights available upon request.
Lamellas	6 x 25 cm made of highly absorbing, punched aluminum lamellas with enclosed rock wool mat. Coated in any desired RAL colour
Transparent sheets of glass:	Sheet thickness 12 mm to 20 mm Optionally available in silicate glass, Soundgard TOP® or acrylic glass
Posts:	6 x 25 cm, height can be selected, zinc-plated and coated in any desired RAL colour
Frames:	prefabricated, post-filling systems for HE 160 - 180 at 4 m to 6 m centre distance

Special post/cover



The base can be flexibly designed in terms of height and choice of material.

For instance, in a standard design of open-pored wooden concrete, wet-in-wet cast with a proven 12.5 cm reinforced concrete slab.



Statics:

Kohlhauer's Clearwall® meets all required specifications set out in ZTV-Lsw 88.

The required rigidity (facing in direction of travel) is achieved by means of solidly built posts and wall-type shaping of the sheets of glass. These are both screwed on to the posts and the concrete base.

The lamellas run along the top and bottom, thus withstanding dynamic loads and pressure caused by accumulation of snow.

Wind loads (pressure and suction) acting on the wall at a right angle to the road surface are absorbed by means of the posts, 6 x 25 cm in dimension, and the threaded connections of the sheets of glass with the posts and the concrete base. On top of that, the bevelled, one-piece sheets of glass, as well as the threaded connection of the lamellas with the sheets of glass, ensure the sturdiness of a space frame structure.

Coveted window seats on the rails

Efficient expansion of railways is being advanced in order to counter traffic volume on roads and to reduce environmental impacts involved with that. But here too, measures to protect the landscape and environment have to be taken into consideration. Travellers will still be able to enjoy the view of the countryside while residents are protected against the burdens caused by noise from high-speed railway lines and high-speed train routes.



Tried and approved.

The new system Clearwall HS – a sound absorbing and at the same time transparent system, especially for use on railways – complements the planner's range of products due to its constructive scope for design. It meets all requirements made in specification ZTV-Lsw 88 and DS 800.2001 of the Deutsche Bahn AG (German Railway).

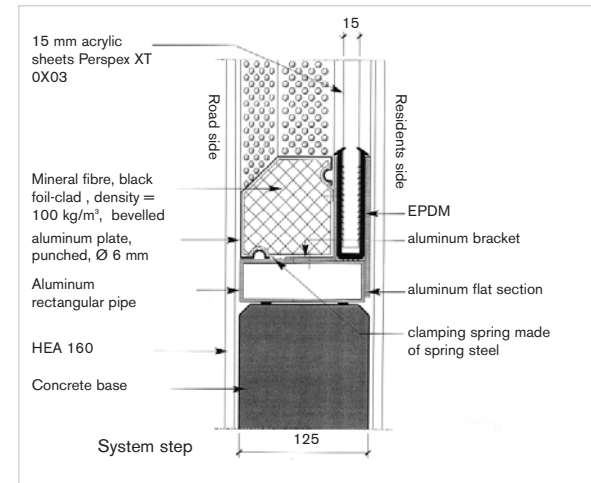
Flexible and efficient.

The slim, post-symmetric design can be used in variable way along railway lines and in the immediate vicinity of railway stations. The modular design allows a combination with all common transparent materials like acrylic glass, glass and polycarbonate. However it also allows for individual design areas within opaque noise protection walls. By analogy with the lamella structure with Clearwall®, the sound-absorbing frames with Clearwall HS are made of punched aluminum with enclosed rock wool in horizontal structure design. In this way, the system achieves absorption values of up to <math>< 4 \text{ dB}</math>. special surface coatings ensure protection against graffiti.



Comparison of Clearwall®/Clearwall HS

	Centre distance	Module height	Absorption	Insulation
CW	2 - 6 m	2 m	4 - 8 dB	29 - 33 dB
CW HS	4 - 5 m	1 m	4 dB	29 - 33 dB



Variable.

Due to its modular design, Clearwall HS meets purchaser's demands in terms of height and width. The frame giving the impression of being static, with its absorbing attachment shell allows for many varied designs. Of course, Clearwall HS can be implemented in all RAL tones that are in frequent demand.



Jointly developing better solutions.

With its product range for transparent and sound-absorbing noise protection, Kohlhauser cooperates with processors of aluminium, wooden and concrete noise protection elements and with planners, building companies and decision-makers in

Road Construction Offices. Those who wish to implement economic and well thought-out and forward-looking solutions, will have come to the right company with Kohlhauser.

Because Kohlhauser has many years of experience and can offer a comprehensive service – starting from planning and consultation via production, logistics up to special processing techniques like coating, screen-printing and cutting. So present us with a real challenge!

