



KOHLHAUER® Grid-Insulation-Systems (GIS) – QUALITY OF LIFE

KOHLHAUER ALUFERA® – SIMPLE / PROVEN / ECONOMICAL

Austria · Bosnia & Herzegovina · Bulgaria · China · Czech Republic · France · Germany · Greece · Hong Kong · Italy · Korea · Latvia · Netherlands · Poland · Romania · Serbia · Slovakia · Spain · Sweden · Switzerland · Turkey · United Kingdom

MULTIFARIOUS

Optimized construction
Large-sized formats
Economical design





KOHLHAUER **ALUFERA**® - UTMOST FUNCTIONALITY FOR ECONOMICAL NOISE PROTECTION

After the successful introduction of the patented plantable system KOHLHAUER PLANTA®, KOHLHAUER® is presenting the new all-round Grid-Insulation-System (GIS) **KOHLHAUER ALUFERA**®.

Based on the proven design of our PLANTA system, this element had been specially developed for the needs of the new trans-european future markets, without having to renounce the proven construction principle. The result is a new and attractive large-sized noise barrier element, with the well-known and highly efficient acoustical properties and the easy to assemble, patented technology.

APPLICATION

KOHLHAUER **ALUFERA**® noise barrier systems perfectly combine an appealing finish with sustainable construction and high technical requirements. All KOHLHAUER® Grid-Insulation-Systems (GIS) have been tested by renowned institutes for noise insulation, sound absorptivity, wind load, frost and road salt resistance, durability etc. and so KOHLHAUER **ALUFERA**® as well.

BENEFITS

- Innovative aluminium sectional frame for increased stability
- Solid tongue and groove interlock for easy stacking of multiple elements
- More solid vertical bars for even higher noise barriers (EN 1794-1, App. A)
- Ventilation and drain ducts for constant noise barrier performance and water drainage
- Innovative click-fastening system for various post profiles (patent pending) reduces the assembly time effort at the construction site
- Modular standard components (4.960 x 1.000 mm, 4.960 x 1.500 mm and 3.960 x 1.000 mm, 3.960 x 1.500 mm) for a cost efficient realisation of large-scale projects
- Various height compensation modules (stackable) for easy adaptation to different landscapes
- Extensive colour range for all system components allows an individual design
- CE-certified quality



PRODUCT SPECIFICATIONS

- Excellent sound-insulating and highly absorptive performance. Classified in B3 and A3 according to ZTV-Lsw on both sides (optionally available in A4)
- Solid element structure for a consistent natural appearance
- All used materials are completely recyclable
- Extremely high aging and corrosion resistance
- High UV and colour resistance for all used materials
- Combinable to other KOHLHAUER® noise barrier elements

TECHNICAL SPECIFICATIONS

- **Noise Insulation:**
Category B3 according EN 1793-2
- **Sound absorption:**
Category A3-(A4) according EN 1793-1
- **Weight:** approx. 35 kg/m²
- **Windload:** Standard version up to 1,4 kN/m² (for additional requirements up to 2,1 kN/m²)
- **Load bending** tested according EN 1794-1
- **Fire resistance:** assigned to category A1 according EN/ISO 1716 and 1182
- **Minimum service live:** 30 years
- **Width:** 122 mm
- **Tested on dynamic load through snow impact**

Reasonable modifications, meeting our high quality requirements and supporting the further product development are reserved.

CLASSIFICATION OF THE ACOUSTIC CHARACTERISTICS

According EN ISO 717-1 as well as EN 1793		
	Sound insulation	Absorption
ALUFERA	RW (C;Ctr) = 34 (-2;-6) dB; DL _R 28 dB (Category B3)	DL _a = 11 dB (Category A3)



KOHLHAUER® Grid-Insulation-System (GIS) – KOHLHAUER **ALUFERA**® with screen printing

NOISE BARRIER IS QUALITY OF LIFE

Noise in residential areas is often perceived as annoying. This is where man and noise are in a direct conflict. KOHLHAUER **ALUFERA**® barriers help to ease the situation, supporting the life quality of our environment.

Bypass roads, highways and motorways are a permanent source of noise. Protecting the residents from annoying noise puts some special requirements on noise barriers.

Not only inner city areas require flexible noise barrier solutions, that can be placed easily between existing objects. Whenever there is a limited space availability, suitable noise barrier solutions that integrate seamlessly with the environment are required.

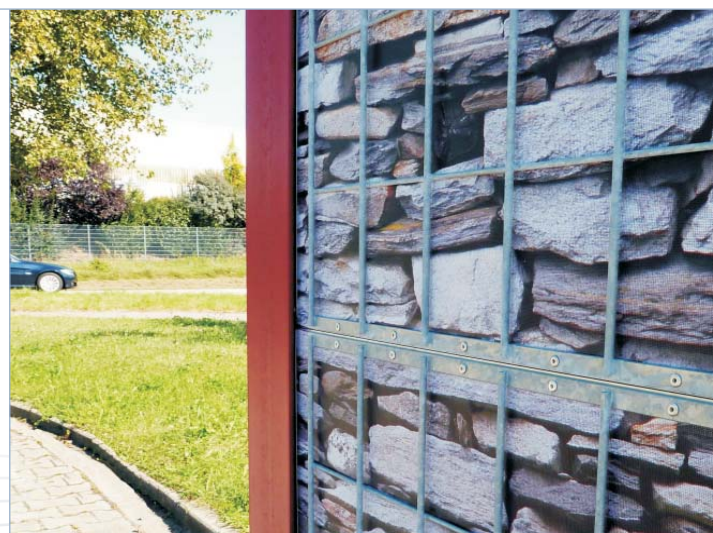
The implementation with structural calculated post foundation system provides permanent security.

More and more engineers, architects and authorities rely on KOHLHAUER® Grid-Insulation-Systems (GIS) and its variations for its high sustainability and effectivity.



KOHLHAUER **ALUFERA**® (GIS)

Two coloured element due to different protection net



KOHLHAUER **ALUFERA**® (GIS)

Printed 'gabions optics'

SYSTEM LAYOUT

BASIC ELEMENTS

- The basic elements are available in sizes of 3.960 x 1.000 / 3.960 x 1.500 / 4.960 x 1.000 / 4.960 x 1.500 mm
- Elements can be displaced using the reusable eyebolts and rivet nuts integrated in the upper chord
- Standard equipment: innovative aluminium concept frame, galvanised (80 µ) load-transferring steel grid, protection net (grey, mesh sizes: 2 x 2 mm), KOHLHAUER® insulation (160 kg/m³), classes B3/A3, incl. 2 fixing springs
- The elements are fixed in the post using patent-pending fixing springs

ADVANCED ELEMENTS

- **Height compensation 100**, to compensate for various ground shapes, as base elements for ground integration or as a design variant between the elements
- **Height compensation 25**, for use between the elements
- **Cover panel**, for a proper finish of stacked elements with innovative click technology
- **Adjustment** to post HEA-U 160 and larger available
- **Protection nets** disponible in various colors for an enhanced visual appearance of the noise barrier
- **Screen printing** for individual scope of design
- **Acoustic insulation foils** for meeting special sound absorption (A4) requirements
- **Selected RAL colours**, for a high quality visual design of the noise barrier (see colour chart)

COLOUR CHART

Red Tones



RAL 3001
Signal Red



RAL 3003
Ruby Red

Blue Tone



RAL 5017
Traffic Blue

Green Tones



RAL 6005
Moss Green



RAL 6011
Reseda Green

Metallic effect



RAL 9007
Grey Aluminium



RAL 9006
White Aluminium

White



RAL 9010
Pure White

Grey Tones

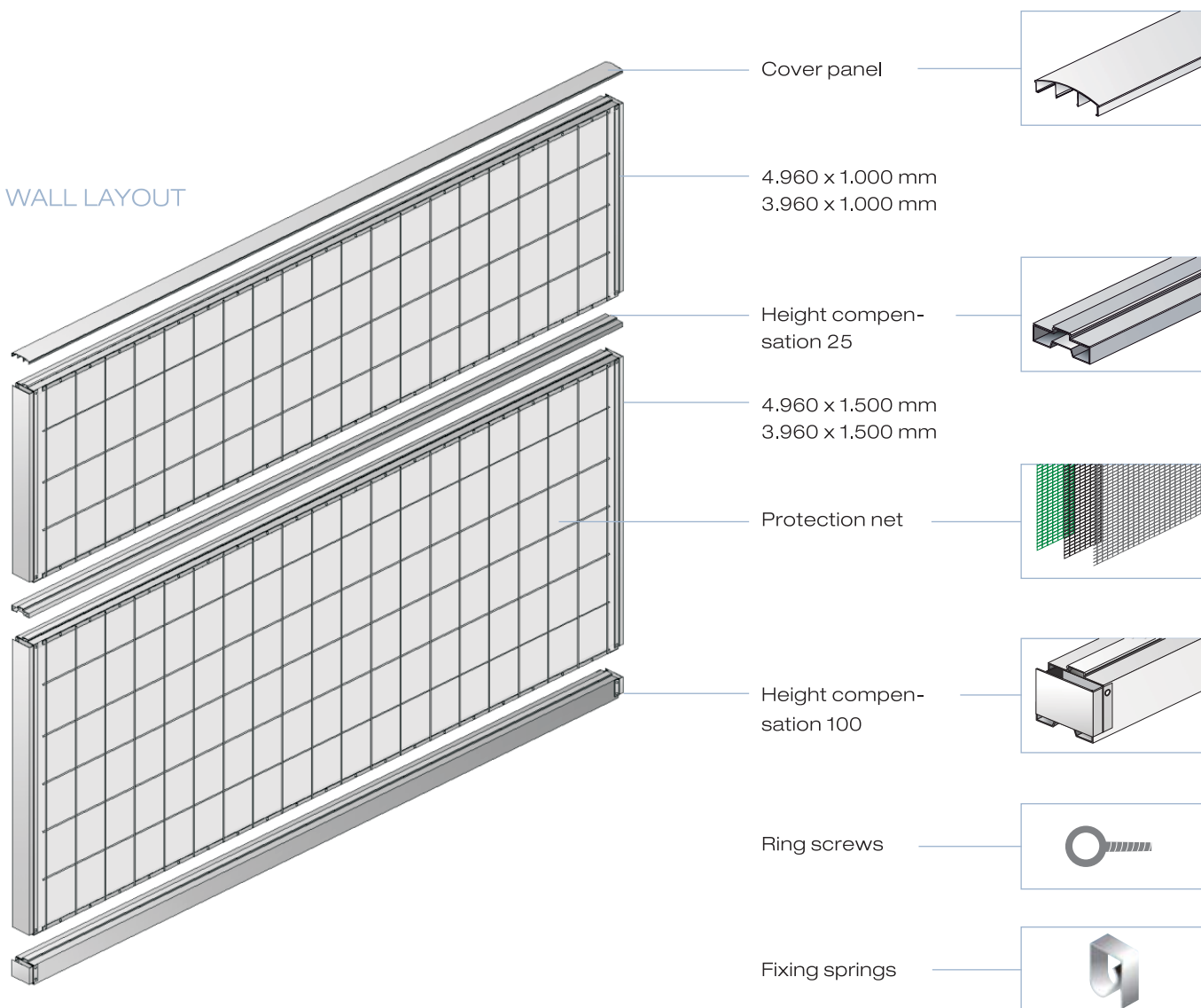


RAL 7004
Signal Grey



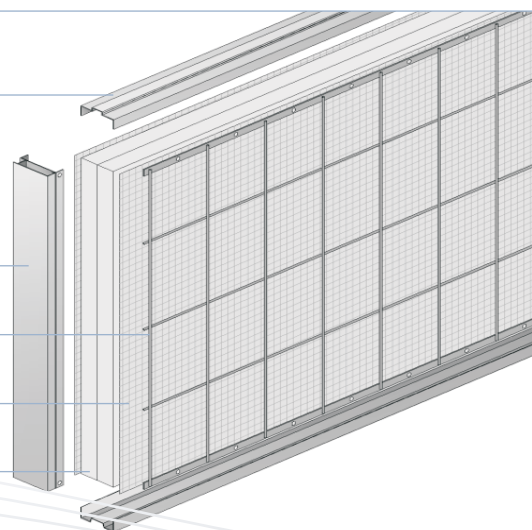
RAL 7035
Light Grey

WALL LAYOUT



WALL LAYOUT (FROM OUTSIDE TO INSIDE)

- Innovative aluminium structure frame with tongue and groove section
- Lateral section for supporting the fixing spring
- Load-transferring, galvanised steel grid
- UV-resistant protection net
- Double-layer, high dense mineral wool, RAL quality certificate





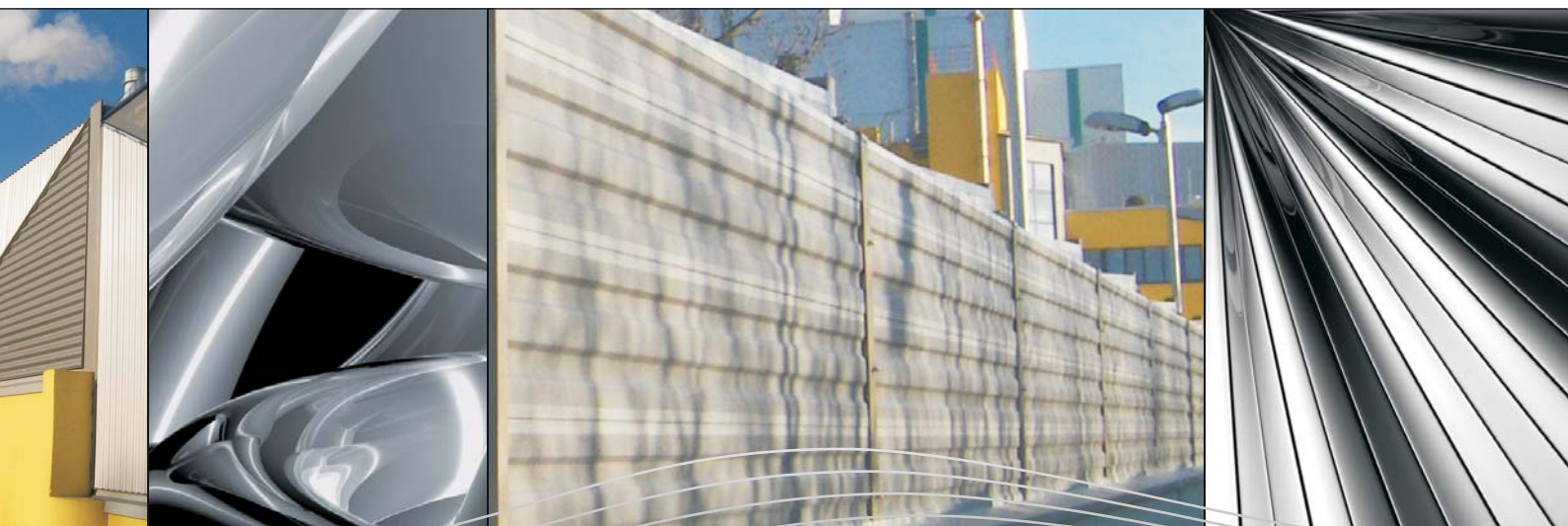
KOHLHAUER® NOISE BARRIERS – QUALITY OF LIFE

KOHLHAUER ALUMNA® – MODERN INDUSTRIAL DESIGN

Austria · Bosnia & Herzegovina · Bulgaria · China · Czech Republic · France · Germany · Greece · Hong Kong · Italy · Korea · Latvia · Netherlands · Poland · Romania · Serbia · Spain · Sweden · Switzerland · Turkey · United Kingdom

ALUMINIUM <

High-quality aluminium elements
One or both sides absorbent
Unfading appearance



KOHLHAUER **ALUMNA**® - MODERN INDUSTRIAL DESIGN

HIGH-QUALITY ALUMINIUM ELEMENTS

KOHLHAUER® noise barriers are a perfect combination of sophisticated technology, environmentally friendly design and attractive appearance. KOHLHAUER **ALUMNA**® combines industrial design with high quality static and acoustic characteristics.

KOHLHAUER **ALUMNA**® elements provide the industrial appearance of a metal façade. They are used wherever smooth technical metal design is called for.

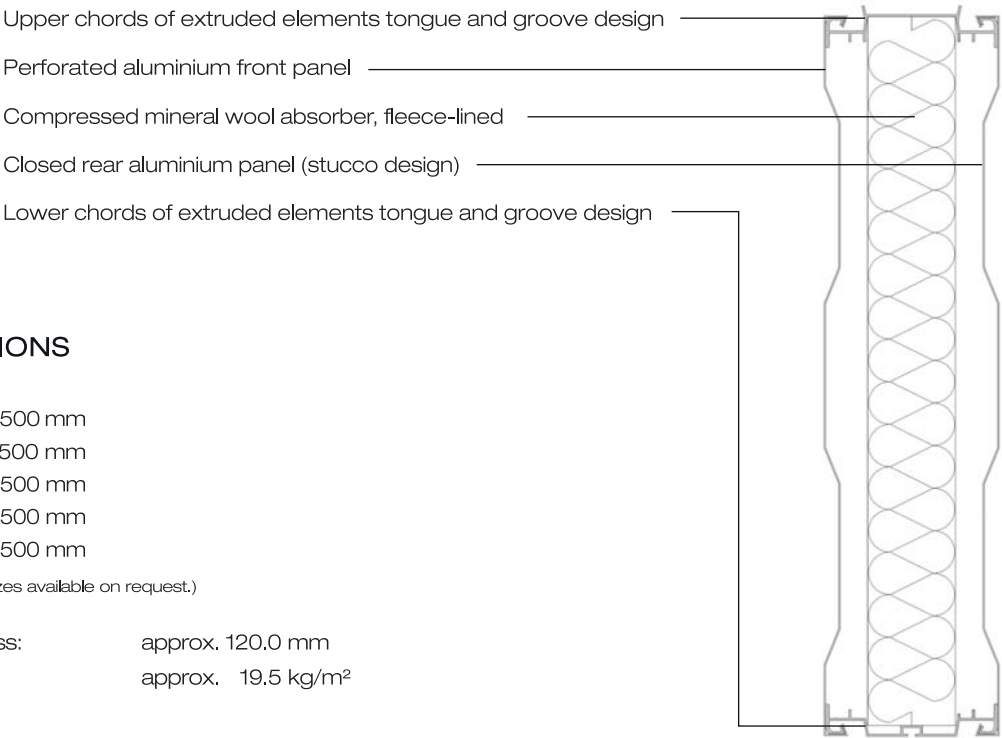
The elements are made of structural upper and lower chords of extruded aluminium. The front and rear wall panels of high-quality aluminium alloy are hooked into the chords and riveted to the side caps. The upper and lower chords act as a tongue and groove system to prevent noise being transmitted. The side caps are also extruded elements with integrated seals on both sides.

The benefits to you

- Stable form, seawater-resistant
- Upper and lower chords make for stability
- Range of colour coatings available
- Integrated seals on both sides
- Easy to install
- Excellent sound insulation and absorption
- Meets requirements of EN-1793, EN-1794 and ZTV-Lsw 06
- Suitable with KOHLHAUER **SCORSA**® **FRAME** systems



KOHLHAUER **ALUMNA®** - MODERN INDUSTRIAL DESIGN
HIGH-QUALITY ALUMINIUM ELEMENTS



STANDARD DIMENSIONS

- 4960 x 500 mm
- 3960 x 500 mm
- 2960 x 500 mm
- 2460 x 500 mm
- 1960 x 500 mm

(Special sizes available on request.)

Thickness: approx. 120.0 mm
Weight: approx. 19,5 kg/m²

CLASSIFICATION OF THE ACOUSTIC CHARACTERISTICS

According to EN ISO 717-1 as well as EN 1793		
	Sound insulation	Absorption
ALUMNA (one side absorbent)	RW (C;Ctr) = 29 (-1;-5) dB; DL _R 25 dB (Category B3)	DL _a = 13 dB (Category A4)





KOHLHAUER® NOISE BARRIERS – QUALITY OF LIFE

KOHLHAUER LIGNA® – NATURAL / RENEWABLE / FLEXIBLE

Austria · Belgium · China · Czech Republic · France · Germany · Greece · Hong Kong · Italy · Korea · Latvia · Netherlands · Poland · Romania · Russia · Slovakia · Spain · Sweden · Switzerland · United Kingdom

TIMBER

Environmentally friendly
High durability
Cost-effective designs



KOHLHAUER **LIGNA**® - AN IDEAL ADAPTION TO THE ENVIRONMENT

NATURAL WOODEN NOISE PROTECTION

KOHLHAUER® noise barriers globally stand for ecological as well as innovative, durable and economical protection solutions. Furthermore they can be distinguished through its natural design - KOHLHAUER **LIGNA**®, the natural and cost-effective solution.

KOHLHAUER **LIGNA**® - High quality timber noise barriers from treated pine (other woods are available upon request) as a highly sound absorbing or sound reflective version. Both types are in accordance with the German ZTV-LSW 06 standard and official test results are available. The elements are CE-certified and correspond to EU standards.

The elements are to be mounted between pre-installed posts; in piling pipe, concrete sleeve or auger pile foundations. Wall heights up to 6 m are feasible.

THE CONSTRUCTION

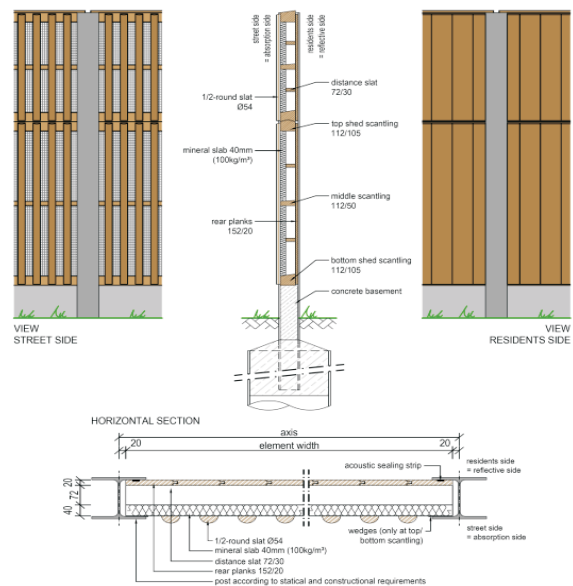
LIGNA-1 | Highly sound absorbing

Upper and lower chord made from profiled cross timbers. Vertical key and slot planking on the back side. All screws and nails from stainless steel V4A accord. to EN 267 (Part 11). In front of the planks an absorption mat (density=100 kg/m³) is mounted; it is covered by a black glass mat on the front side. Vertically nailed round timbers serve as cladding on the noise exposed surface. Vertical frame timbers incorporate milled grooves for pre-compressed joint tape. Additional locking through wedges.

LIGNA-2 | Reflecting

Implementation without absorption plate and the round logs at the front-side.

LIGNA-1
Highly absorbing



KOHLHAUER **LIGNA**[®] - AN IDEAL ADAPTION TO THE ENVIRONMENT

NATURAL WOODEN NOISE PROTECTION

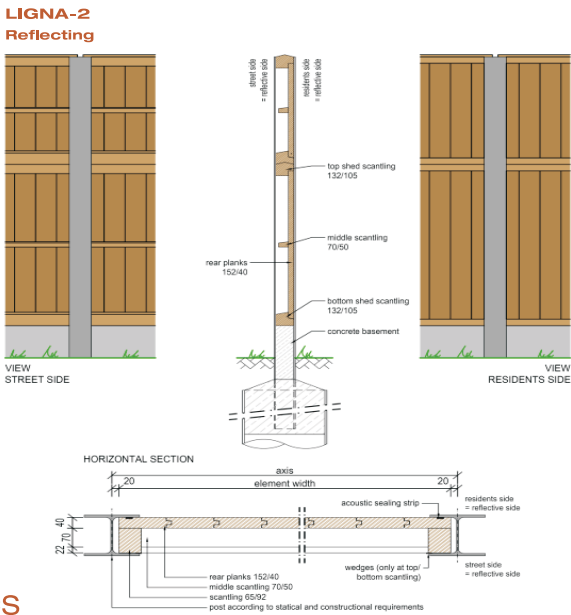
WOOD PROTECTION

A chemical wood preserver is applied through pressure impregnation according to EN 68 800 with chrome free CX-salt (slightly green colour shade). The impregnation is environmentally friendly and persistent. As a result of its resistance to deicing salt, no post-treatment is required.

STANDARD SIZES

3960 x 2000 mm
3960 x 1500 mm
3960 x 1000 mm
(Special formats available upon request.)

Strength: approx. 0.13 m
Weight: approx. 55 kg/m²
For wall heights up to 6.0 m.



CLASSIFICATION OF THE ACOUSTIC CHARACTERISTICS

According to EN ISO 717-1 as well as EN 1793		
	Sound insulation	Absorption
LIGNA-1	RW (C;Ctr) = 32 (-1;-4) dB; DL _R 29 dB (Category B3)	DL _a = 10 dB (Category A3)
LIGNA-2	RW (C;Ctr) = 25 (0;-2) dB; DL _R 25 dB (Category B3)	





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MORE KOHLHAUER® PRODUCTS



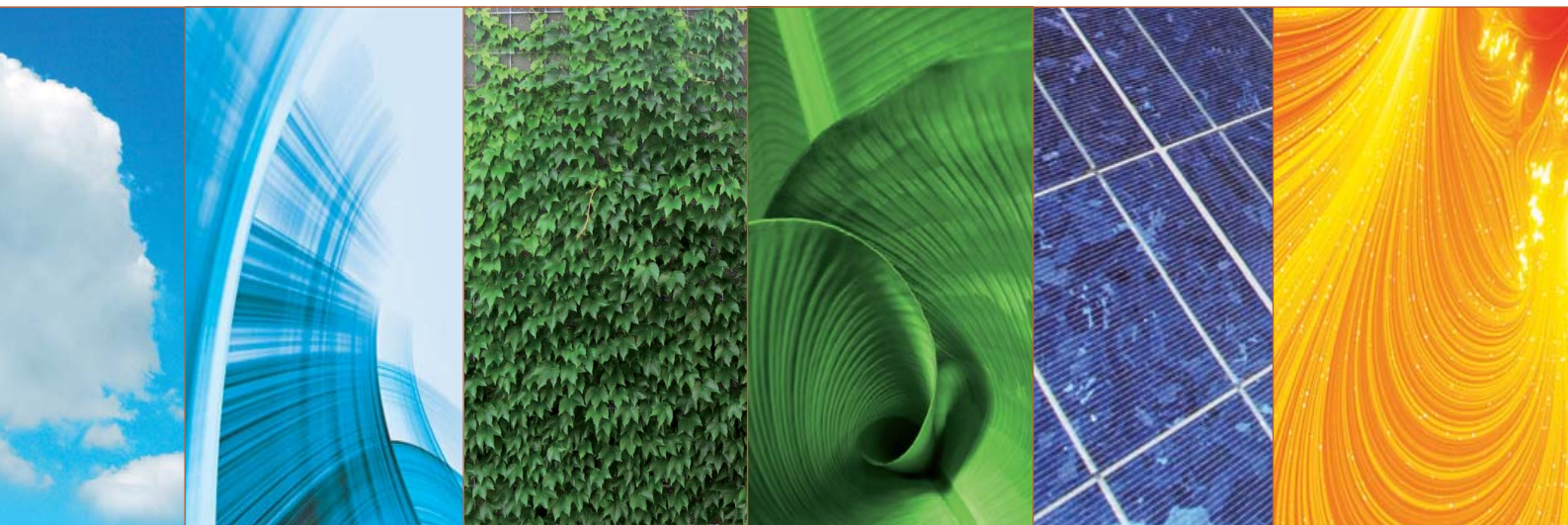
Transparent, reflecting respectively
absorbent noise barrier systems
with transparency and glare shield.



The plantable noise barrier -
eco-friendly, sustainable and
highly functional.



Double benefit: Noise barrier
combined with sustainable
power generation through
solar technology.





KOHLHAUER® NOISE BARRIERS – QUALITY OF LIFE

KOHLHAUER PLANTA® – NATURAL AND ENVIRONMENT-FRIENDLY

Austria · Bosnia & Herzegovina · Bulgaria · China · Czech Republic · France · Germany · Greece · Hong Kong · Italy · Korea · Latvia · Netherlands · Poland · Romania · Serbia · Spain · Sweden · Switzerland · Turkey · United Kingdom

PLANTABLE



Improved construction
Smart system components
Individual design options





KOHLHAUER **PLANTA**® – UTMOST FUNCTIONALITY FOR PLANTABLE NOISE PROTECTION

KOHLHAUER **PLANTA**® noise barriers stand for ecologic noise barrier solutions worldwide. Whether with or without planting – KOHLHAUER **PLANTA**® excels with natural design that adapts seamlessly to any environment.

The sophisticated element design and advanced system components allow for an extremely easy assembly of the noise barriers. KOHLHAUER **PLANTA**® – the reasonable solution for any budget.

APPLICATION

KOHLHAUER **PLANTA**® noise barriers perfectly combine an appealing finish with sustainable construction and high technical requirements. All KOHLHAUER **PLANTA**® noise barriers have been tested by renowned institutes for noise insulation, sound absorptivity, wind load, frost and road salt resistance, durability, etc.

BENEFITS

- Innovative aluminium sectional frame for adaption to regional and statical requirements
- Solid tongue and groove interlock for easy stacking of multiple elements
- More solid vertical bars for even higher noise barriers (EN 1794-1, App. A)
- Ventilation and drain ducts for constant noise barrier performance and water drainage
- Innovative click-fastening system for various vertical post profiles (patent pending) reduces the assembly time effort at the construction site
- Modular standard components (3960 x 1000 mm, 3960 x 500 mm) for a cost-efficient and short term delivery realisation of small and large-scale projects
- Various height compensation modules (stackable) for easy adaptation to different landscapes
- Extensive colour range for all system components allows an individual design
- CE-certified quality





NOISE BARRIER IS QUALITY OF LIFE

Noise in residential areas is often perceived as annoying. This is where man and noise are in a direct conflict. KOHLHAUER **PLANTA**® barriers help to ease the situation, supporting the life quality of our environment.

Bypass roads, highways and motorways are a permanent source of noise. Protecting the residents from annoying noise puts some special requirements on noise barriers.

Inner city areas require flexible noise barrier solutions that can be placed easily between existing objects. Limited space availability always requires suitable noise barrier solutions that integrate seamlessly with the environment.

More and more engineers, landscaping architects and authorities rely on KOHLHAUER **PLANTA**® for its high sustainability, effectivity and acceptance by residents.



PRODUCT SPECIFICATIONS

- Excellent sound-insulating and highly absorptive performance, classified in B3 and A3-A4 according to ZTV-Lsw on both sides
- Suitable for extensive planting on both sides
- Solid element structure for a consistent natural appearance, also without planting
- Extremely high aging and corrosion resistance
- High UV and colour resistance of all used materials
- Combinable to other KOHLHAUER® noise barrier elements
- All used materials 100% recyclable

TECHNICAL SPECIFICATIONS

- Noise insulation, group B3 according to DIN EN 1793-2
- Sound absorption, group A3-A4 according DIN 1793-1
- Wind load of up to 2,0 kN/m² and more
- Weight: 130 kg/element
- Building width 122 mm
- Fire resistance, assigned to class A1 according to EN/ISO 1716 and 1182
- Minimum useful life: 30 years
- Load bending tested according to EN 1794-1

Reasonable modifications, meeting our high quality requirements and supporting the further product development, are reserved.

CLASSIFICATION OF THE ACOUSTIC CHARACTERISTICS

According to EN ISO 717-1 as well as EN 1793		
	Sound insulatio	Absorption
PLANTA BASIC	$R_w(C;C_{tr}) = 34$ (-2;-6) dB; DL_R 28 dB (Group B3)	$DL_a = 11$ dB (Group A3)
PLANTA BASIC-4	$R_w(C;C_{tr}) = 33$ (-2;-6) dB; DL_R 27 dB (Group B3)	$DL_a = 12$ dB (Group A4)
PLANTA BASIC-11	$R_w(C;C_{tr}) = 36$ (-2;-7) dB; DL_R 29 dB (Group B3)	$DL_a = 13$ dB (Group A4)

SYSTEM LAYOUT

BASIC ELEMENTS

- The basic elements are available in sizes of 3960 x 1000 mm or 3960 x 500 mm (for use in the lower or upper wall section)
- Elements can be displaced using the reusable eyebolts and sleeves integrated in in the upper chord
- Standard equipment: innovative aluminium concept frame, galvanised (80µ) load-transferring steel grid, HDPE grid fabric (green, mesh sizes: 4 x 4 mm), KOHLHAUER® insulation (145/160 kg/m³) classes B3/A3, incl. 2 fixing springs
- The elements are fixed in the pole using patent-pending fixing springs

ADVANCED ELEMENTS

- **Height compensation 100** to compensate for various ground shapes, as base elements for ground integration or as a design variant between the elements
- **Height compensation 25** for use between the elements
- **Cover** for a proper finish of stacked elements with innovative click technology
- **Adjustment** to post HEA-U 160 and larger available
- **Grid fabrics** in various colours with small mesh size (1.5 x 1.5 mm) for an enhanced visual appearance of the noise barrier
- **Acoustic insulation** foils for meeting special sound insulation ($R_w > 36$ dB, $DL_R > 29$ dB) and sound absorption ($DL_a > 13$ dB) requirements
- Selected **RAL colours** for a high-quality visual design of the noise barrier (see colour sheet)

COLOUR CHART

Red tones



RAL 3001
Signal red



RAL 3003
Ruby red

Blue tone



RAL 5017
Traffic blue

Green tones



RAL 6005
Moss green



RAL 6011
Reseda green

Metallic effect



RAL 9007
Grey aluminium



RAL 9006
White aluminium

White



RAL 9010
Pure white

Grey tones

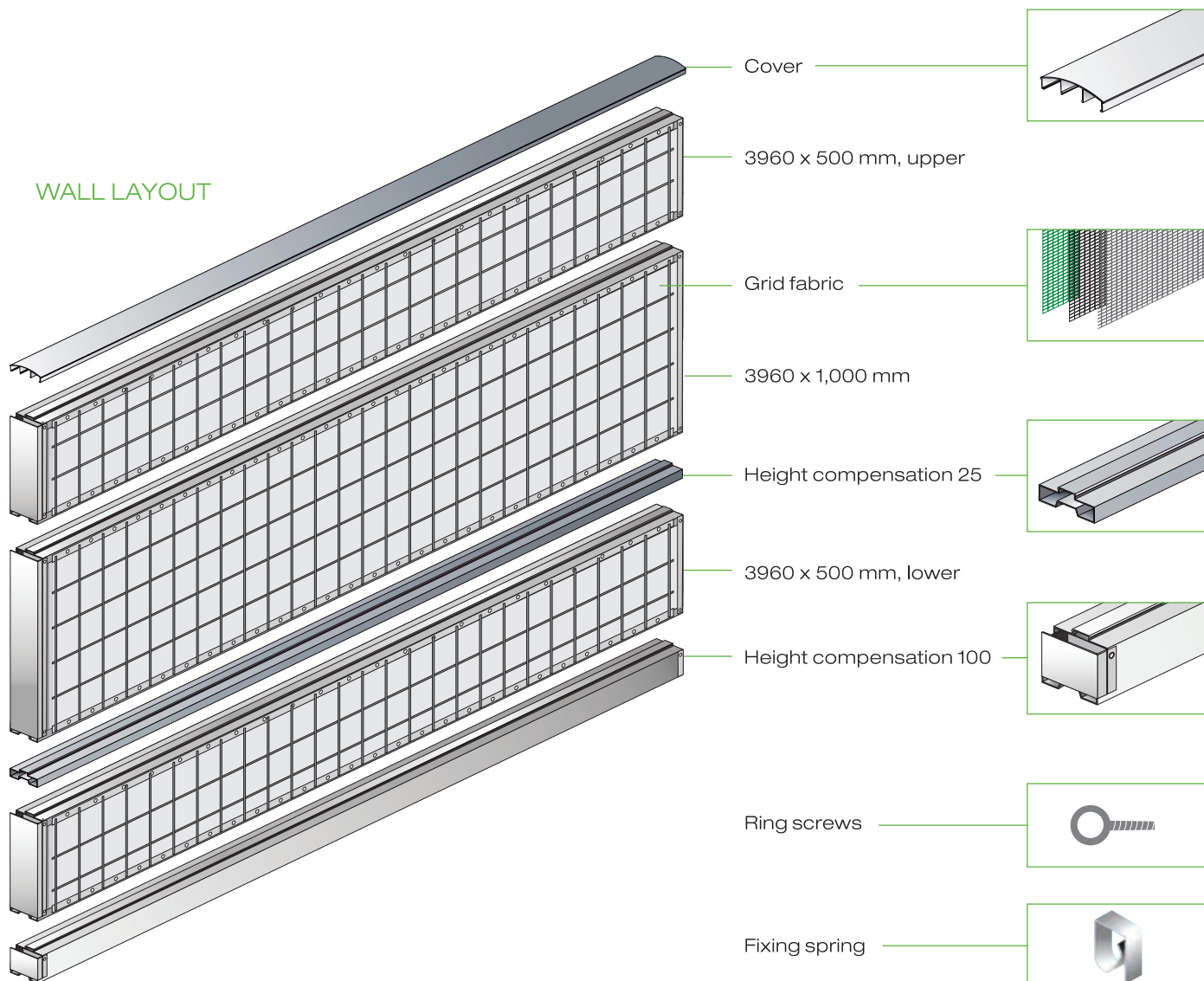


RAL 7004
Signal grey



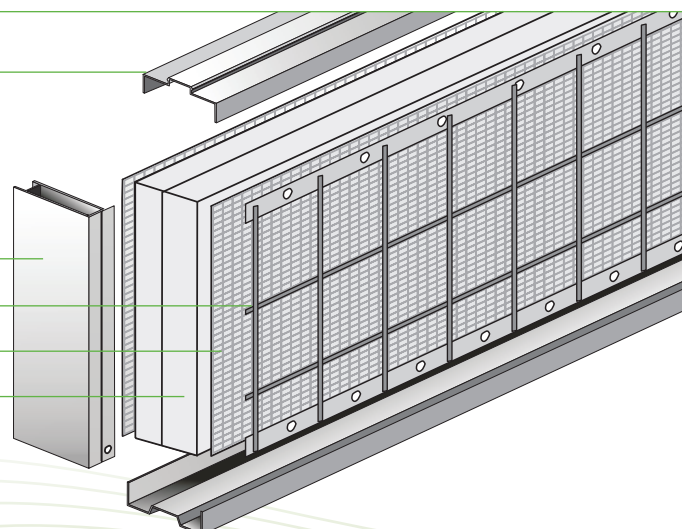
RAL 7035
Light grey

WALL LAYOUT



WALL LAYOUT (FROM OUTSIDE TO INSIDE)

- Innovative aluminium structure frame with tongue and groove section
- Lateral section for supporting the fixing spring
- Load-transferring, galvanised steel grid
- UV-resistant grid fabric
- Double-layer, highly dense mineral wool, RAL quality certificate





KOHLHAUER® NOISE BARRIERS – QUALITY OF LIFE

KOHLHAUER SCORSA® FRAME - THE TRANSPARENT SOLUTION

Austria · Bosnia & Herzegovina · Bulgaria · China · Czech Republic · France · Germany · Greece · Hong Kong · Italy · Korea · Latvia · Netherlands · Poland · Romania · Serbia · Slovakia · Spain · Sweden · Switzerland · Turkey · United Kingdom

BEST VIEW <

Marketable standard sizes
Various pane material
Individual design options



KOHLHAUER **SCORSA**® FRAME - UTMOST FUNCTIONALITY FOR TRANSPARENT NOISE PROTECTION BY STANDARD FORMAT

KOHLHAUER **SCORSA**® FRAME - noise barriers are renowned for their innovative, durable and eco-economic noise solutions and captivation design - Functional walls with the best views. The sophisticated element design and advanced system components allow for an extremely easy assembly of the noise barriers. KOHLHAUER **SCORSA**® FRAME, the reasonable solution for any budget.

KOHLHAUER **SCORSA**® FRAME noise barriers perfectly combine attractive appearance, simple assembly with superior technical achievement. They allow a panoramic view of the surrounding landscape and help to prevent the well known problem of "tunnel vision". In this way they help to improve quality of life as well as increase road traffic safety.

Benefits

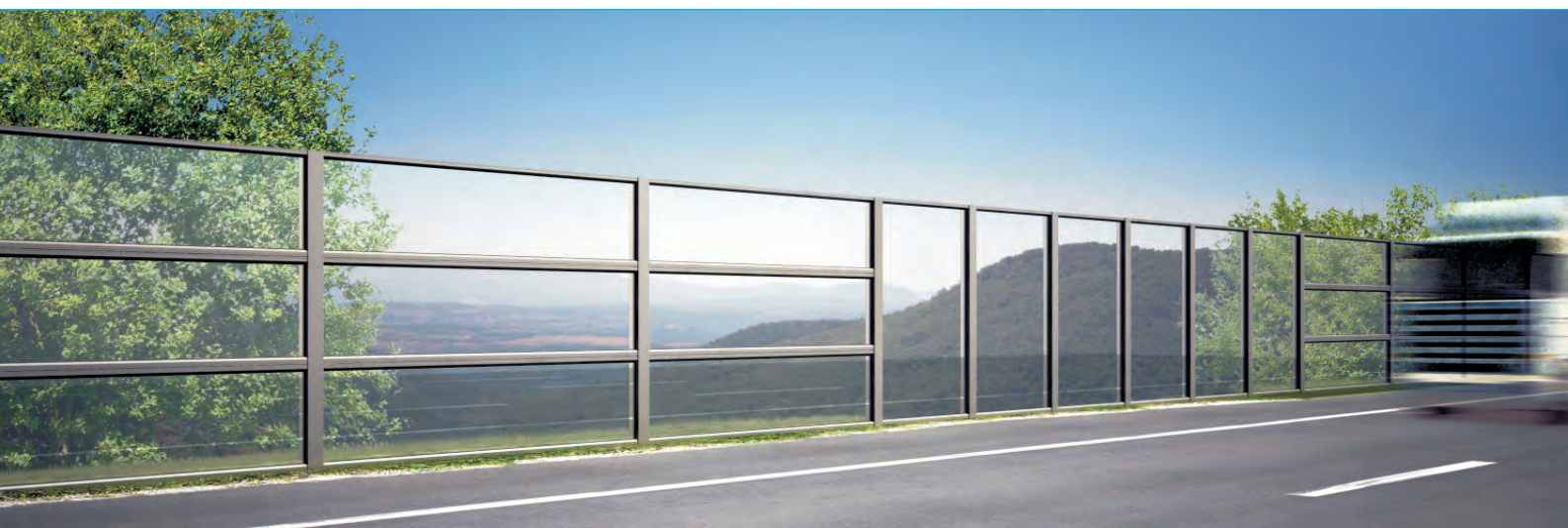
- Noise barrier without blocked views
- Stable frame profil made of coated aluminium
- Modular standard components for a cost-efficient realisation of small, medium and large-scale projects
- Available with various pane materials
- Also available with tempered surface
- Optional bird protection stripes
- Extensive colour range for individual design
- CE conformity are present

Product specifications

- Excellent sound-insulating performance
- Stable element structure – also for high loads
- Extremely high aging and corrosion resistance
- High UV and colour resistance of all used materials
- All used materials 100% recyclable
- Pane infill made of acrylic, silicate glass as well as polycarbonate
- Increased sound protection and sound absorbtion, when combined with other KOHLHAUER® noise barrier elements

Classification of the accoustic characteristics accord. to EN ISO 717-1 as well as EN 1793

SCORSA FRAME (sheet material)	Thickness	Sound insulation		
		$R_w (C; C_{tr})$	DL_r	Group
Polycarbonate	8 mm	29 (-1;-2) dB	27 dB	B3
	15 mm	33 (-1;-2) dB	31 dB	B3
Single-pane safety glass	12 mm	30 (-1;-1) dB	29 dB	B3
Acrylic glass	15 mm	33 (-1;-2) dB	30 dB	B3
	20 mm	33 (-2;-2) dB	31 dB	B3



TECHNICAL SPECIFICATIONS

- KOHLHAUER **SCORSA® FRAME** is designed for the highest standard supplementary technical regulation, the German ZTV-LSW 06
- Noise insulation values depend on thickness of panes and materials according to DIN EN 1793-2; e.g. $R_w \geq 30$ dB, $DL_R \geq 29$ dB
- Wind load 1,0 kN/m² and more
- Fire resistance class 1-3 pursuant to DIN EN 1794-2, Appendix A
- Load bending tested pursuant to DIN EN 1794-1, Appendix 4

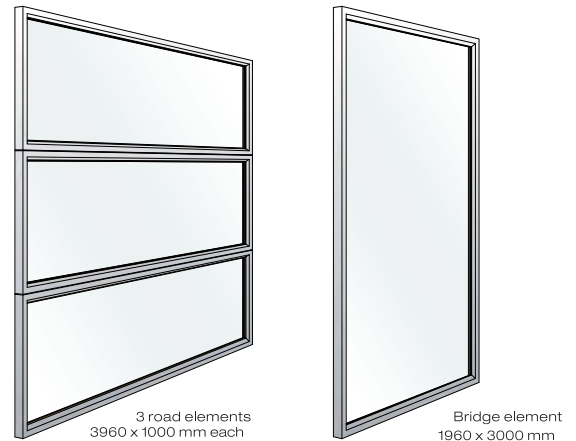
BASIC ELEMENTS

Standard equipment for road

Element dimension 3960 x 1000 mm, aluminium frame 70/63, coated with RAL 9006, pane material: Acrylic sheets (PMMA), Polycarbonate (PC) or single-pane security glass, regarding sound insulation requirements and local legislations, incl. 4 clamping bolts for pillar-mounting.

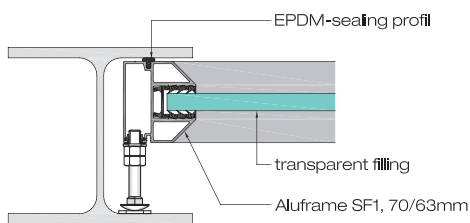
Standard equipment for bridges¹⁾

Element dimension 1960 x 3000 mm, aluminium frame 70/63, coated with RAL 9006, pane material: Acrylic sheets (PMMA) or Polycarbonate (PC) (regarding local legislations), incl. 8 clamp bolts for pillar mounting and sealing rubber (if required)

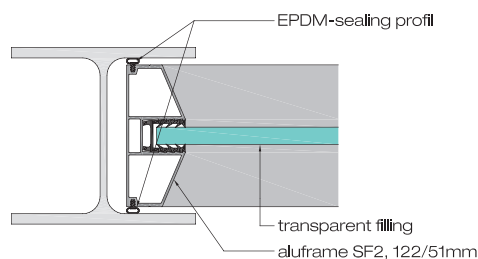


ADVANCED ELEMENTS

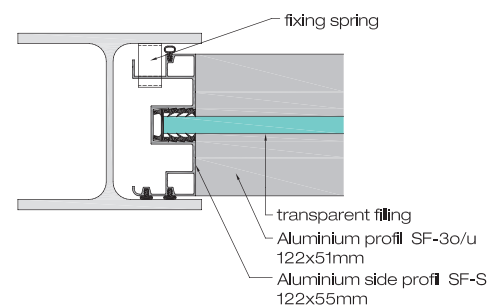
- **Transit profil** (3960 x 113 mm) for installation on a KOHLHAUER **PLANTA®** element
- **Bird protection** applied with screen printing, horizontal, 2/30/2 mm
- Security rope, including sheet drillings
- Special formats (e.g. parallelogram)
- Compensation for different post distances
- **Easy-to-clean-coating** to facilitate removing graffiti from the panes
- Selected **RAL-Colours** for a high-quality noise barrier finish (see colour chart)
- Colour options for transparent panes are available on request



KOHLHAUER SCORSA® SF1



KOHLHAUER SCORSA® SF2



KOHLHAUER SCORSA® SF3

¹⁾ Application in fall-risk areas only permitted with additional guard equipment according to respective regulations



KOHLHAUER® NOISE BARRIERS - QUALITY OF LIFE

KOHLHAUER® CLEARWALL®

Austria · Belgium · China · Czech Republic · France · Germany · Greece · Hong Kong · Italy · Korea · Latvia · Netherlands · Poland · Romania · Russia · Slovakia · Spain · Sweden · Switzerland · United Kingdom

INNOVATIVE <

Transparent and absorbing
Various designs
Proven quality



KOHLHAUER **SCORSA**® – UTMOST FUNCTIONALITY

KOHLHAUER® **CLEARWALL**®

A noise absorptive product of the KOHLHAUER SCORSA® range

The refined technology of CLEARWALL® stands for noise protection of the highest standard. CLEARWALL® is a modular frame system that combines transparent noise protection with integrated, absorbing elements. The noise absorption level of the frame element is 4 dB. Using a highly absorbing basement, absorption levels of up to 8 dB for the entire. It is not necessary anymore to renounce transparent elements, when absorbing noise barriers are required. Travelers may still view landscapes, cities, monuments and sights. KOHLHAUER® offers two different CLEARWALL® systems.

CLEARWALL® VS

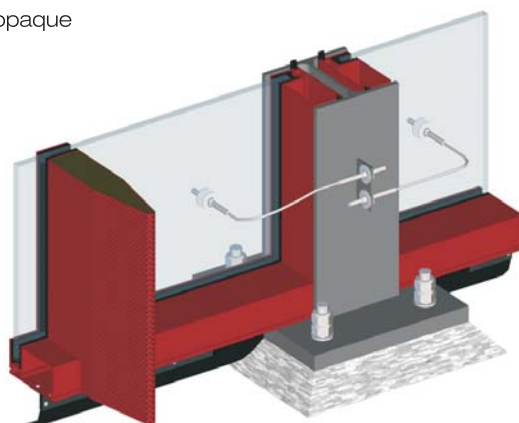
The basis for this transparent and absorbing noise protection system is a sophisticated design with vertical lamella, integrated into a 4-sided frame system with transparent panels. Using 4-sided frames, the elements can be mounted one above each other. The screw connection of the lamella with panel provides the stability of a space frame work. The vertical arrangement of the lamella also serves as glare protection. Looking to the front, glare can be avoided; whilst looking to the side, a clear view can be maintained. Hence, CLEARWALL® VS can easily be used for glare protection areas where usually opaque systems would be required. Additionally, the vertical lamellas provide graffiti and dirt protection.

CLEARWALL® VS - The Construction

Modular, pre-mounted element

Standard sizes: 4000 x 2000, 4000 x 1000 mm
5000 x 2000, 5000 x 1000 mm

Distance between lamellas: 40-60 cm
(Special formats available on request)



KOHLHAUER **SCORSA**® – UTMOST FUNCTIONALITY

KOHLHAUER® **CLEARWALL**®

CLEARWALL® HS

CLEARWALL® HS is a transparent frame system with noise absorbing properties. Highly active absorber elements are integrated into the frame system and the centre bar.

The integrated absorber elements are covered by perforated plates. The result is a harmonious looking frame system, which optionally can be delivered in different colours. The modular elements can easily be set one above the other (4 m elements with one centre bar).

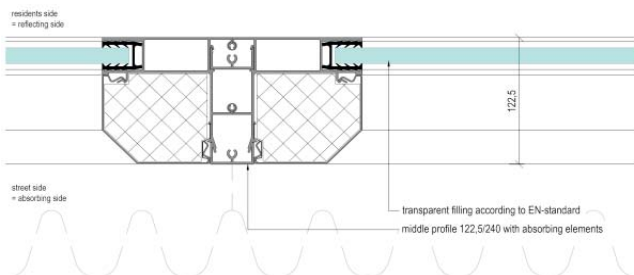
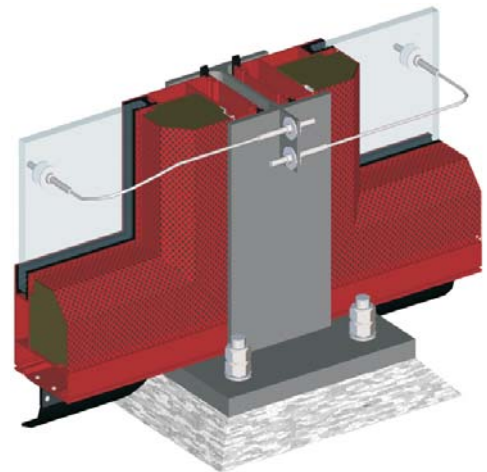
However its horizontal nature is maintained. The clear structure of the elements provides a pleasant appearance and vista to the road user and at the same time transparent noise protection for the residents.

CLEARWALL® HS - The Construction

Modular, pre-mounted element

Standard sizes: 4.000 x 1.000 mm

(Special formats available on request)





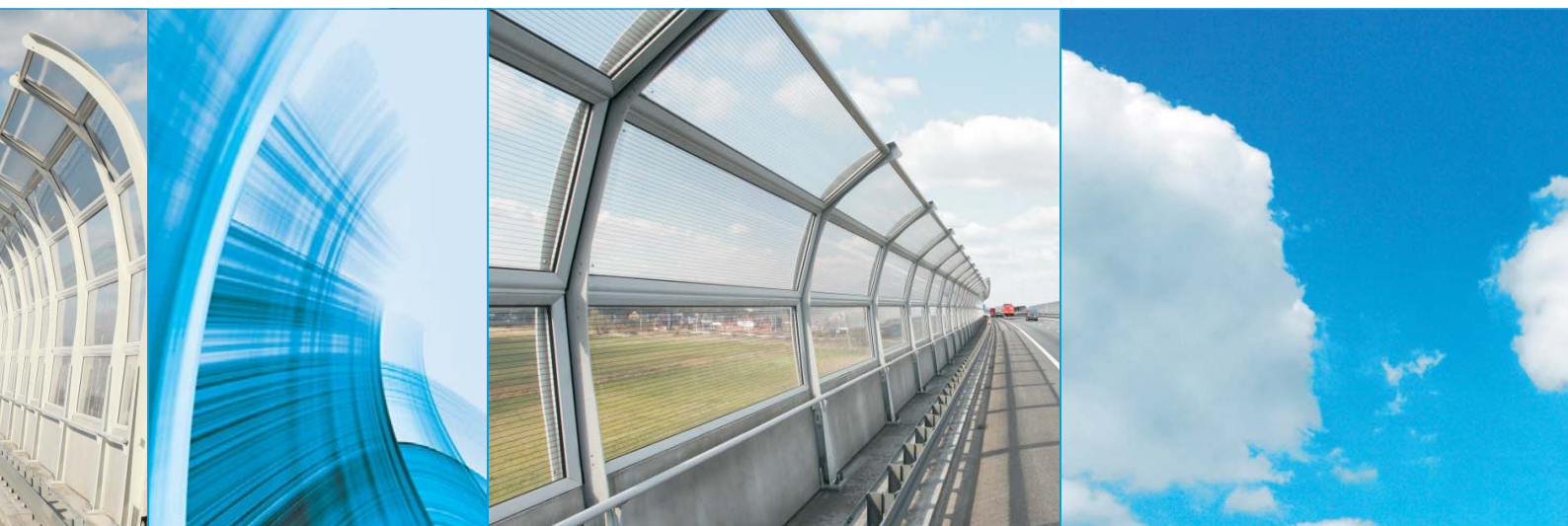
KOHLHAUER® NOISE BARRIERS – QUALITY OF LIFE

KOHLHAUER SCORSA® FLEX - THE FLEXIBLE SOLUTION

Austria · Bosnia & Herzegovina · Bulgaria · China · Czech Republic · France · Germany · Greece · Hong Kong · Italy · Korea · Latvia · Netherlands · Poland · Romania · Serbia · Spain · Sweden · Switzerland · Turkey · United Kingdom

NEW <

Easy to install
Efficient protection from
wind and noise
Maximum transparency



KOHLHAUER **SCORSA® FLEX** - UNIQUE FLEXIBILITY **DURABILITY AND COST-EFFECTIVE DESIGN**

KOHLHAUER **SCORSA® FLEX** noise barrier system excels with its innovative, modular and highly flexible design. SCORSA FLEX systems allows you to construct curved noise barriers with transparent frames. Curved systems have the advantage of offering improved noise reduction while lowering the height of the barrier. The KOHLHAUER **SCORSA® FLEX system** provides a full system solution including supports, a flexible, hinged frame and special clamps. It is a system solution for quick and easy installation, a well designed and thought-through system that guarantees excellent value for money, while still meeting the highest demands on design and functionality.

Application

KOHLHAUER **SCORSA® FLEX** - noise barriers perfectly combine attractive appearance, simple assembly with superior technical achievement. They allow a panoramic view of the surrounding landscape and help to prevent the well known problem of "tunnel vision". In this way they help to improve quality of life as well as increase road traffic safety.

KOHLHAUER **SCORSA® FLEX's** straight lines make them stand out without having that depressing, oppressive effect on motorists. The refractive effect of the curves in the material transforms sunlight into a flat, lively band with shadow effects that are pleasant for neighbouring residents to look at. Motorists also prefer this system with its different levels, as they are not distracted by posts and instead see a constant, pleasant barrier.

Benefits

- Impressive design
- System solution for quick and easy installation
- Stable hinged frame out of coated aluminium
- Optional with anti-graffiti coated surface
- Transparent materials with high noise insulation, as well as proven stone chip resistance
- UV resistant and weatherproof design
- Sheets can be delivered in various colours / materials
- CE declaration of conformity
- Requirements of the standards EN-1793, EN-1794 and the german ZTV-Lsw 06 are fulfilled
- Modular standard elements for cost-effective construction of projects of any size



KOHLHAUER **SCORSA® FLEX** - UNIQUE FLEXIBILITY

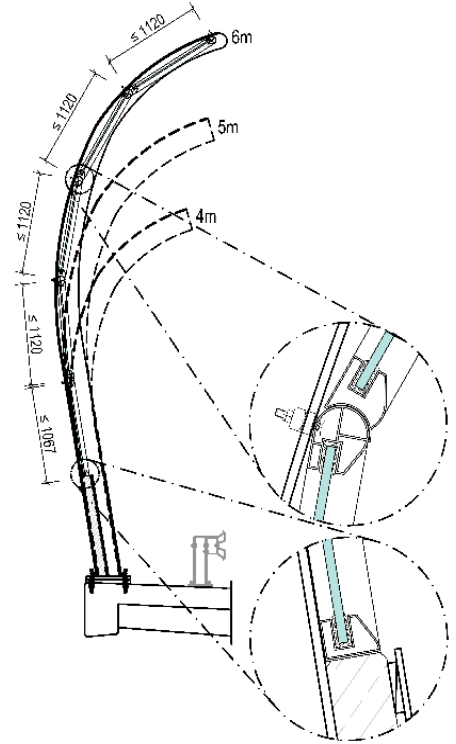
DURABILITY AND COST-EFFECTIVE DESIGN

Basic Elements

- Posts as curved T-profile, for optimal use of materials
- Aluminium hinged frame
- Aluminium cast clamps
- Suitable EPDM rubbers for soundproof connections
- Temporary or permanent graffiti protection
- 3.96 x 1.00 m modular construction
- Various base options with CONCRETE (reflective) or with KOHLHAUER **ALUFERA®** (highly absorptive on both sides)

Product Properties

- Excellent sound insulation properties
- Stable elemental structure, suitable even for high load application
- Very high durability and corrosion resistance
- High UV resistance and colourfastness for all used materials
- 100% recyclable materials
- Acrylic (PMMA), silicate glass (ESG/annealed glass) or polycarbonate (PC) pane filling
- Combinations with **KOHLHAUER ALUFERA®** combines high noise protection and noise absorption.





KOHLHAUER® NOISE BARRIER SYSTEMS – QUALITY OF LIFE

KOHLHAUER SCORSA® - SILICATE GLASS SOLUTIONS

Austria · Bosnia & Herzegovina · Bulgaria · China · Czech Republic · France · Germany · Greece · Hong Kong · Italy · Korea · Latvia · Netherlands · Poland · Romania · Serbia · Spain · Sweden · Switzerland · Turkey · United Kingdom

SECURITY GLASS



Single or multi layer (SG/LSG)
Variable surfaces
Innovative potentialities



KOHLHAUER **SCORSA**® – EXCELLENT TRANSPARENCY

KOHLHAUER® SILICATE GLASS SOLUTIONS

Silicate glass is an ambitious and rising sheet material for transparent noise barriers. The selection of different materials and the wide range of possibilities meet all requirements for sustainable noise protection.

Solutions for noise protection with best prospects

Due to its global availability, KOHLHAUER® single-pane security glass (SG) is a price-efficient alternative to other transparent materials.

The properties of single-pane glass, in conjunction with the KOHLHAUER SCORSA® frame, satisfy all requirements of EN 1793, EN 1794 and the German ZTV-Lsw 06. The glass is composed of a heat-treated pane, which during manufacture is heated to above 600°C and after this cooled down with cold air. During this process, the outsides of the pane cool faster than the core. This results in tensile stresses in the core and compressive stresses at the surface. Consequently, the glass has high impact resistance and impact strength, and is resistant even to extreme temperature fluctuations. In case of fracture, it collapses into small pieces without sharp edges. Single-pane security glass has already been used for many years in the automotive industry.

Double Noise Protection

Laminated security glass (LSG) from the brand LNP (Lamex Noise Protection) consists of two or more layers of semi-tempered security glass (STG), or single-pane security glass (SG). By means of a sheet of PVB-film as an intermediate layer, these layers can be joined to create a laminated security glass with specific properties.

Benefits

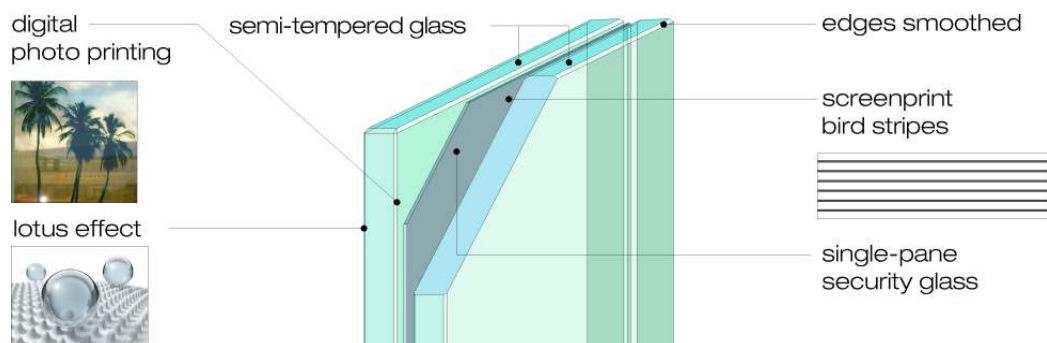
- Fulfills high standards of optical and architectural requirements
- Extreme resistance to chemicals
- Excellent stability against break guarantees LSG LNP out of 2 x SG/STG
- Weather resistance in all climates
- Suitable for all KOHLHAUER **SCORSA**® FRAME systems
- Digital photo printing design options
- High load capacity and high sound insulation
- Impact safety per EN 1794, in combination with KOHLHAUER **SCORSA**® FRAME SF1



Noise Barrier in Miesbach, Germany (digital photo print)

KOHLHAUER **SCORSA**® – EXCELLENT TRANSPARENCY

KOHLHAUER® SILICATE GLASS SOLUTIONS



The properties of security glass were tested and proven. The following tables show the element properties.

KOHLHAUER SCORSA® FRAME-R 'Road' WITH **SINGLE-PANE SECURITY GLASS** (t=12 mm)

Format	3960 x 1000 mm
Airborne sound insulation	$DL_R = 29$ dB (Group B3)
Element dry weight	1,31 kN
Wind load (characteristic value)	1,02 kN/m ²
Load from snow clearance	10 kN/(2x2 m)
Impact of stones	Fulfilled
Resistance to brushfire	Group 3
Estimated service lifetime	>30 years

KOHLHAUER SCORSA® FRAME-B 'Bridge' WITH **LAMINATED SECURITY GLASS LNP** (t=2x10 mm)

Format	1960 x 3000 mm
Airborne sound insulation	$DL_R = >33$ dB (Group B3)
Element dry weight	2,94 kN*
Wind load (characteristic value)	1,75 kN/m ² *
Load from snow clearance	15 kN/(2x2 m)*
Impact of stones	Fulfilled
Resistance to brushfire	Group 1
Estimated service lifetime	>30 years

* Theoretical values determined by calculation, test results may vary.



Noise Barrier in Neckarsulm, Germany – KOHLHAUER SCORSA® (digital photo print)



KOHLHAUER® NOISE BARRIERS – QUALITY OF LIFE

KOHLHAUER® CLEARVIEW XT - THE EFFICIENT SOLUTION

Austria · Bosnia & Herzegovina · Bulgaria · China · Czech Republic · France · Germany · Greece · Hong Kong · Italy · Korea · Latvia · Netherlands · Poland · Romania · Serbia · Spain · Sweden · Switzerland · Turkey · United Kingdom

ACRYLIC SHEET <

Transparent sheet material
Different thicknesses
Proven quality



KOHLHAUER **SCORSA**® – UTMOST FUNCTIONALITY

KOHLHAUER® CLEARVIEW XT - ACRYLIC SHEETS (PMMA)

KOHLHAUER® CLEARVIEW XT stands for quality proven sheet material of transparent noise barriers. The sheets are made of extruded acrylic glass, the most popular material in noise protection.

Solutions for noise protection with best results

As a system supplier for noise control and environmental management R. Kohlhauser GmbH is committed to innovative solutions for noise protection with the highest degree of transparency.

Since 1993 our company has offered a high-quality and efficient product range as well as extensive know-how in the field of planning, logistics, production and distribution of noise protection systems for road and rail projects.

Highly transparent sound insulation wall made of acrylic glass excel through excellent optical properties, longevity and resistance to atmospheric corrosion (10 years warranty) as well as best sound control properties. Because of its variable formats and thicknesses, its availability in various colours and special designs, KOHLHAUER® CLEARVIEW XT provides a wide scope for creative opportunities, e.g. in combinations with a lot of different variants.

Benefits

- Light weight
- High degree of transparency
- Fulfills the criteria of EN-1793, EN-1794 and German ZTV-Lsw 06
- High degree of chemical resistance
- Impact-resistant
- UV and weather resistant
- Resistant to stone impact
- Excellent sound insulation properties
- Suitable for KOHLHAUER **SCORSA**® FRAME systems



KOHLHAUER® CLEARVIEW XT - ACRYLIC SHEETS (PMMA)

The characteristics of KOHLHAUER® CLEARVIEW XT sheets have been tested and proven.
The following tables display the properties of the material.

MECHANICAL PROPERTIES	VALUE	OTHER PHYSICAL PROPERTIES	VALUE
Yield stress	70 MPa	Density	1.19 g/cm ³
Elongation at break	5%	Vicat refractory deformation temperature	102 °C
Elasticity modulus	3000 MPa	Thermal coefficient of expansion	70x10 ⁻⁶ mm/m°C
Flexural strength	98 MPa	Maximum service temperature	70 °C
		Light transmission in %	92%

KOHLHAUER **SCORSA**® with CLEARVIEW XT as sheet material is a complete high-quality noise barrier system that fulfils all requirements and expectations, as the following data demonstrates. “Frame-R” system is designed for use along roads and “Frame-B” system for use on bridges and other exposed sections.

KOHLHAUER SCORSA® WITH KOHLHAUER® CLEARVIEW XT	“FRAME-B” 15 mm *
Format	1960 x 3000 mm
Airborne sound insulation	DL _R = 30 dB (group B3)
Element dry weight	1.17 kN
Normal (90°) load (due to wind and static)	1.31 kN/m ²
Normal (90°) load (due to snow clearance)	9.22 kN/(2x2 m)
Impact of stones	Fulfilled
Resistance to brushfire	Class 1
Estimated service lifetime	30 years

In case of danger through falling sheet fragments, we recommend additional security measures.

* Different sheet thicknesses on request





KOHLHAUER® NOISE BARRIERS – QUALITY OF LIFE

KOHLHAUER VOLTA® - THE SUSTAINABLE SOLUTION

Austria · Bosnia & Herzegovina · Bulgaria · China · Czech Republic · France · Germany · Greece · Hong Kong · Italy · Korea · Latvia · Netherlands · Poland · Romania · Serbia · Singapore · South Korea · Spain · Sweden · Switzerland · Turkey · United Kingdom

PHOTOVOLTAICS

Noise protection with
integrated Photovoltaics

Trendsetting

Multifunctional



KOHLHAUER **VOLTA**® – UTMOST FUNCTIONALITY FOR SUSTAINABLE NOISE PROTECTION

KOHLHAUER **VOLTA**® offers a complete new world of perspectives in noise protection. Unmatched sound insulation and absorption combined with solar power generation provides a significant contribution to environment protection. Whether at roadsides or railway tracks, transparent or opaque design, east-west or north-south-direction – KOHLHAUER **VOLTA**® offers the perfect product for any application.

APPLICATION

KOHLHAUER **VOLTA**® noise protection elements perfectly combine an appealing finish with the most easy assembly and technical expertise. Kohlhauer **VOLTA**® integrates solar technology in the proven Kohlhauer noise protection elements. The perfect alignment of noise protection, solar modules and electric output enables defining standardized elements for almost any type of application.

Benefits

- Increased environmental protection contribution without additional costs
- Decentralised sustainable power generation
- Positive impact on the image and acceptance of noise barriers by residents
- Suited for autonomous operation
- Double use reduces the consumption of additional cultivated land and land use conflicts
- Cost synergies between noise protection photovoltaics enable significant economic savings

Product features

- High standardisation level for all elements
- Optimised electrical output up to the energy provider's network connection
- Solar modules can be replaced easily in case of a defect
- High sound insulation and absorption available, depending on the basic element
- KOHLHAUER **VOLTA**® offers the use of Photovoltaics to any investor
- Integrated cable conducts with flexible cover



PRODUCT PORTFOLIO

KOHLHAUER VOLTA® OPAK

For applications that require high sound insulation and absorption.

- Standardized noise protection 3.960 x 1.000 mm
- Offers all benefits of the innovative bothside absorbent Grid-Insulation-System
- Integrated security to avoid theft of Photovoltaics modules

Technical module specifications:

- Aluminium frame modules with 250 Wp of different supplier possible
- 2 pieces/element = 500 Wp at 4.00 m² (3.96 x 1.00 m) surface of Noise Barrier

KOHLHAUER VOLTA® THRU

For applications that require "transparency" in addition to high sound insulation.

- Standardised noise protection elements of 3.000 x 1.000 mm as well as 1.960 x 3.000 mm
- Sound insulation >30 dB
- Compatible with KOHLHAUER **SCORSA®** and other elements

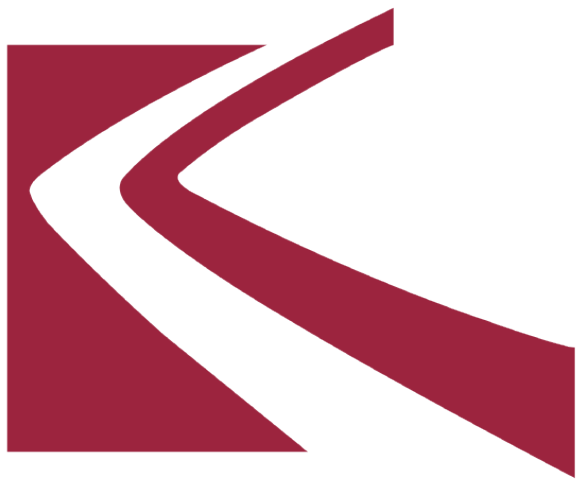
Technical module specifications:

- Wafer between 2 sheets of security glass
- Also available with colour finish
- Transparency of 10% - 30%, customer specific possible
- Thickness of sheet 2 x 8 mm up to 2 x 10 mm
- Integration in Aluminium frames for quick installation

NEXT GENERATION: Standardized package for independent use of urban furniture -

Noise-/Sight-/Wind Protection - Light advertising - Electrical power support through small wind turbine.





KOHLHAUER

KOHLHAUER® | THE SOLUTION PROVIDER
WINDSHIELDS

'A71 TALBRÜCKE REICHENBACH'

VIADUCT - GERMANY

PURPOSE:

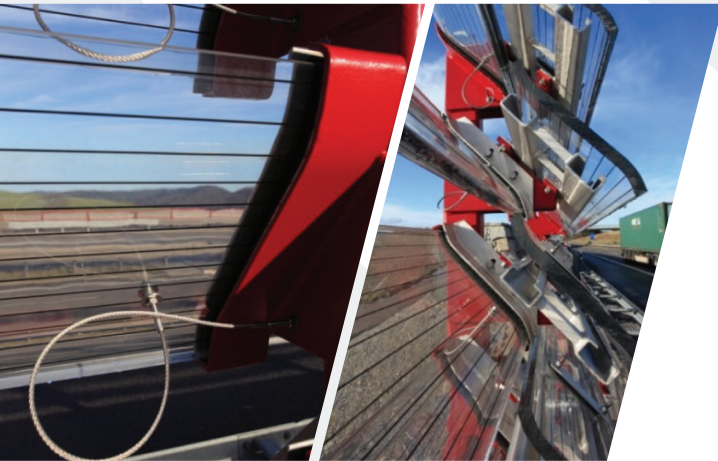
REDIRECT WIND FROM TOP OF THE TRUCKS, DOWN TO THE WHEEL BASE

2.400

PIECES OF SPECIALLY DESIGNED LAMELLAS FROM PLEXIGLAS SOUDSTOP GSCC



YEAR OF REALISATION: 2009



CUSTOM MADE PROJECT

- CONSTRUCTION AND DESIGN ◀
- STATIC ANALYSIS ◀
- STEEL ELEMENTS ◀
- ACRYLIC SHEETS ◀
- DILATATION FIELDS SOLUTIONS ◀
- SAFETY WIRE SECURES ◀

'HIGHWAY A10 KOPER – LENDAVA'

WINDSHIELD - SLOVENIA

PRODUCTION AND SUPPLY

OF TRANSPARENT CUSTOM MADE LAMELLAS

SUPPLIED

BY EVONIK PERFORMANCE MATERIAL GMBH TO LOCAL PARTNER



LENGTH 1.065 M

WIND BARRIER

REDUCE THE WIND FLOW OR DIVERT IT TO THE SIDE, THEREBY REDUCING THE EFFECT OF WIND ON THE TRAFFIC LINE.

THE PROBLEM OF ACCIDENTS CAUSED BY TILTING AND SLIP OF TRANSPORT WITH LARGE WINDAGE AREA WILL BE SOLVED.



‘BRIDGE HOCHMOSEL’

MAKING OF WINDSHIELD-GLAZING - GERMANY

SIZE:

3.500 M²

MATERIAL:

PLEXIGLAS SOUNDSTOP GSCC

REALIZATION:

2019



SUPPORTED BY KOHLHAUER®

