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Title: Safety barrier & Noise barrier: combined systems

Content

- Introduction to ENBF
- Safety barriers and noise barriers: relevant standards
- Combined systems (safety+noise barriers): a sustainable approach
- Evaluation of performance of the combined systems
- Combined systems: main advantage
- Open issues
- Case histories



Effective Members

Asociación Nacional de Industriales de Pantallas y dispositivos Anti-ruido (ANIPAR), Spain + Portugal

Association Professionnelle des Réalisateurs d'Ecrans Acoustiques (APREA), France

Deutscher Verband für Lärmschutz an Verkehrswegen e.V. (DVLV), Germany

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Associated Members

Bayer Sheet Europe, Belgium

CIR Ambiente, Italy

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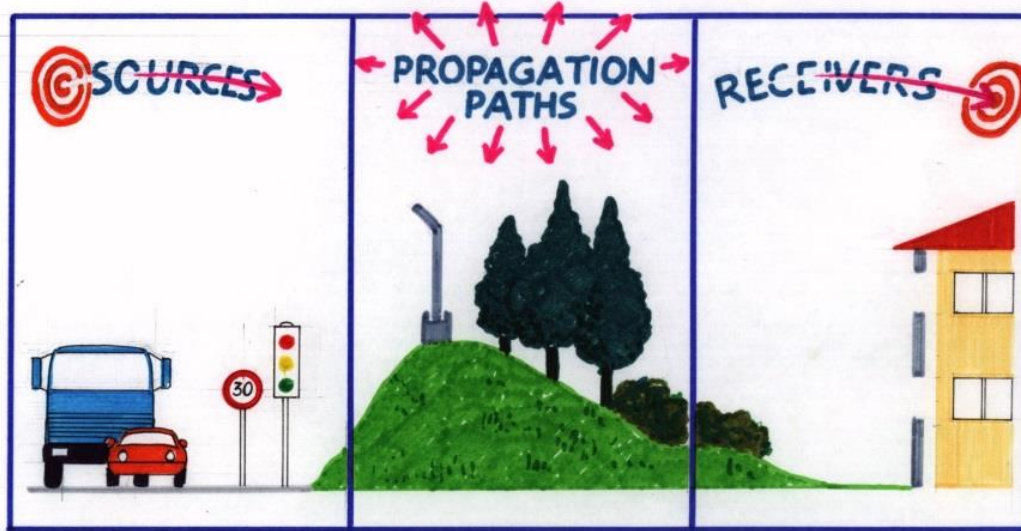
Van Campen Industries B.V, The Netherlands



ENBF goals

- To exchange knowledge and expertise on products and solutions among members of the Federation;
- To provide informative support and cooperation to the bodies in charge of writing European legislation and European technical standards;
- To set up the basis for cooperation between industry, public administration and other relevant stakeholders;
- To develop communication tools in order to spread knowledge and expertise to a large audience.

Road / Rail Traffic Noise Reduction - actions to be taken



Source	porous asphalt :expected reduction up to 4 dB(A) for all receivers
Receivers	sound insulating windows expected reduction up to 15 dB(A) inside the buildings
Propagation	noise barrier / coverings expected reduction up to 15 dB(A) for noise barriers more than 20 dB(A) with coverings



ENVIRONMENT

ARCHITECTURE

EFFICIENCY

COST

CE marking according to CPR



Noise Barriers

hEN 14388 + supporting stds:

AVCP : system 3



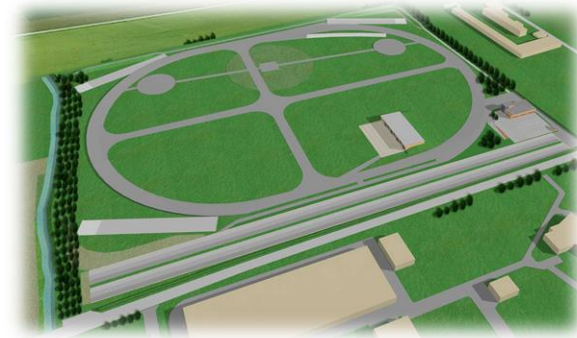
Responsability on Manufacturers:
to declare product performance
to implement FPC



Safety barriers

hEN 1317.5 + supporting stds

AVCP: system 1



Responsability on Notified Bodies:
to perform ITT / declare product performance
To survey FPC

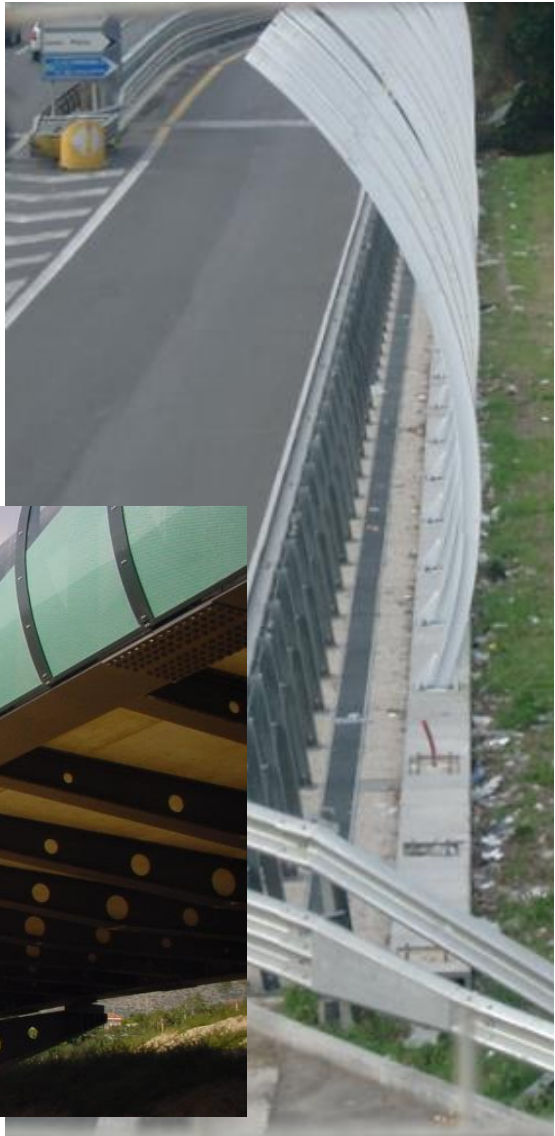
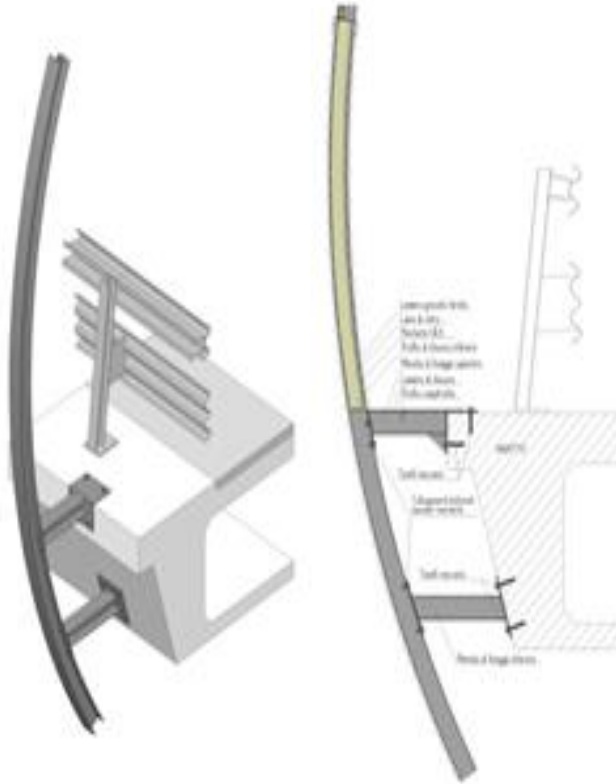
CE marking for Noise Barriers to be installed alongside Road Infrastructures

ENBF – Guidelines & Recommendations (see: on www.enbf.org)

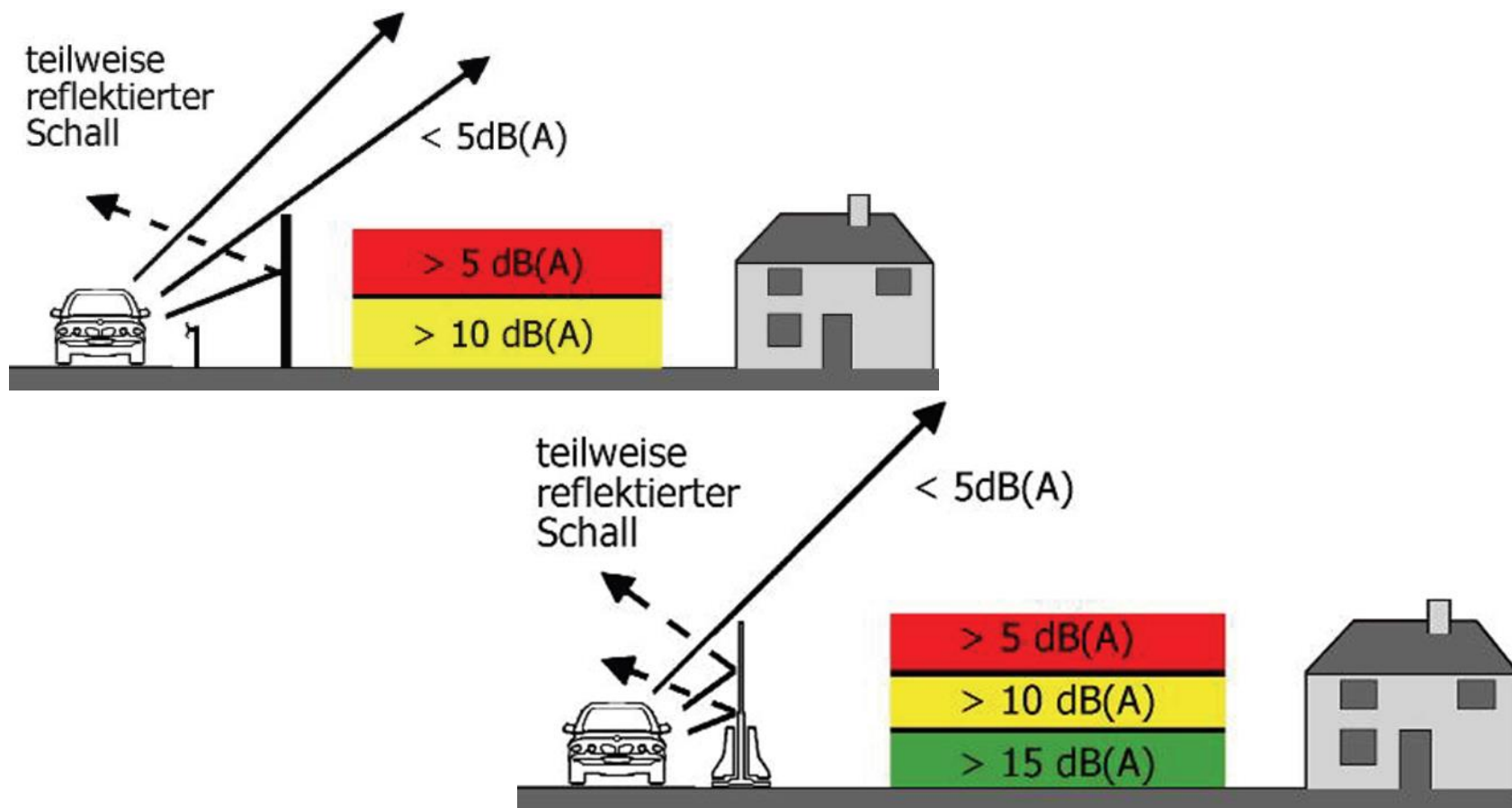
CE marking for noise & safety barrier system consists on the evaluation of following performances:

- Containment level: kinetic energy [kJ] restrained in a controlled way
- System deformation: clear room in front of obstacles and slopes (working width and dynamic deflection)
- Impact severity: risk of injuries for vehicle occupants (acceleration indexes and vehicle cockpit deformation)
- Noise reduction
- Stability requirements (wind load and dynamic load of passing vehicles)
- Safety in use : falling debris, Light reflection
- fire behavior
- Long term performance

Merging of two systems, advantage:
Space and associated cost reduced on bridges

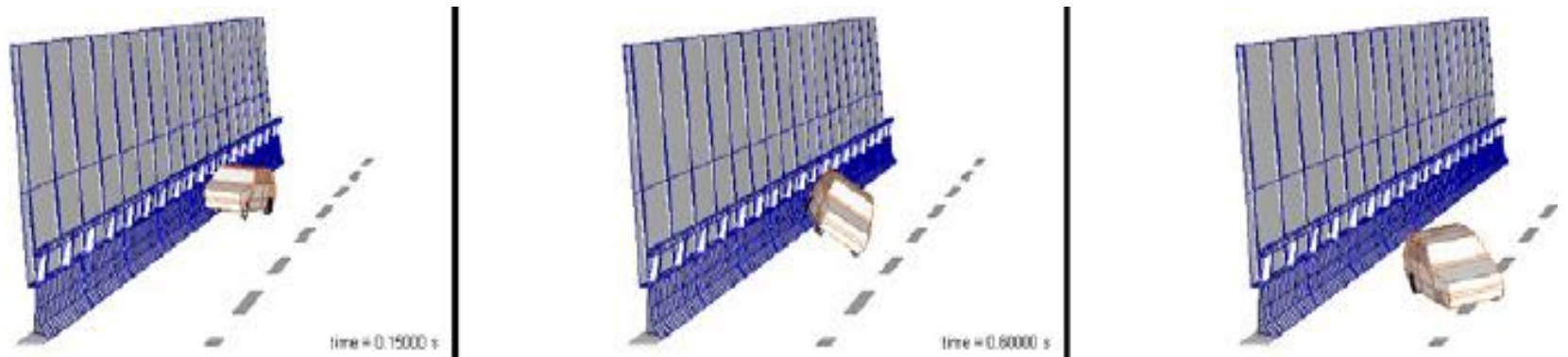


Merging of two systems, advantages:
Improved acoustic performance



Note: pictures by Deltabloc website

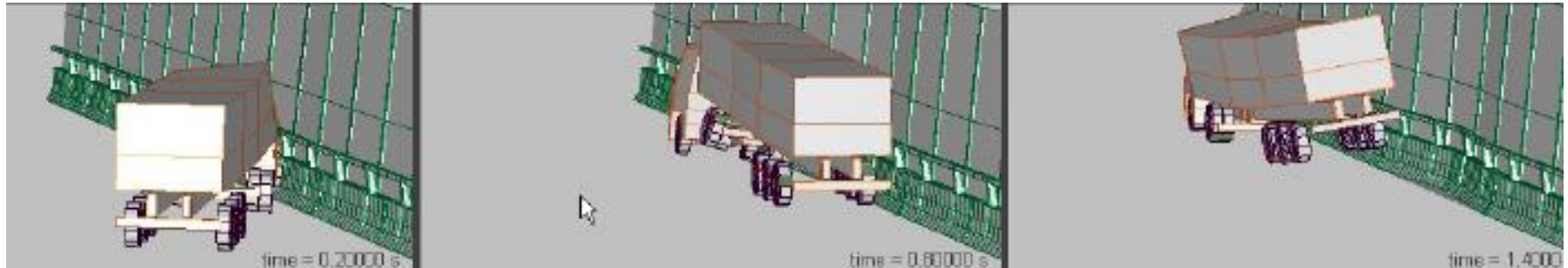
Merging of two systems, issues raised:
Concerns about safety for passenger car occupants,



FEM Modeling on the integrated noise and safety barrier system

TB 11 : increased inertia of the barrier may slightly increase peak acceleration of the vehicle >> ASI little increase expected

Merging of two systems, issues raised:
Concerns about falling debris from noise



FEM Modeling on the integrated noise and safety barrier system

TB 81 : no part of the acoustic barrier should become detached and become dangerous for the traffic on or under the bridge. In any case the contacts of some part of the vehicle and the acoustic panels, if any, should be light. This is helped when the acoustic barrier displaces backwards together with the containment barrier

Case history: metallic integrated system



Case history: metallic integrated system in corten steel
Folding top barrier for easy bridge maintenance





Case history: metallic integrated system

Trasparent sheets included

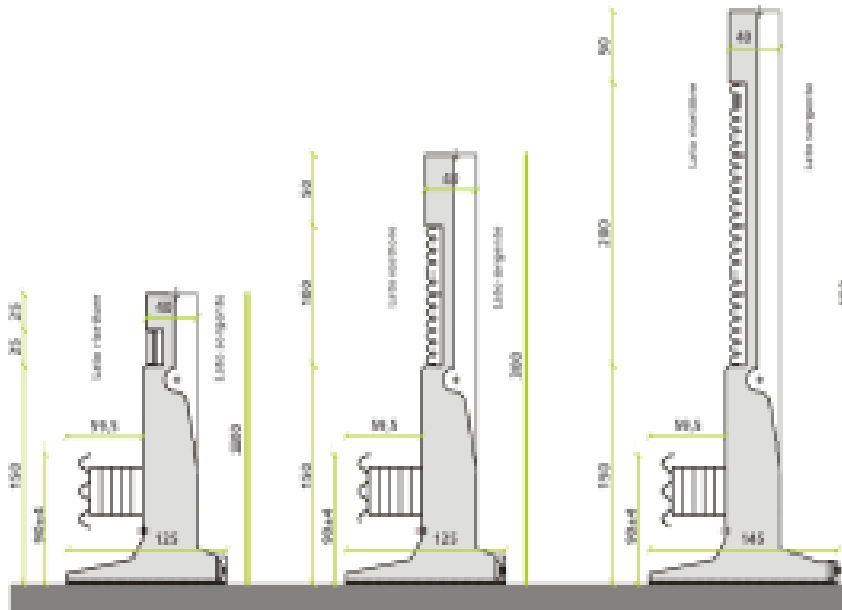


Case history: metallic integrated system
New jersey shaped safety barrier
Transparent element included

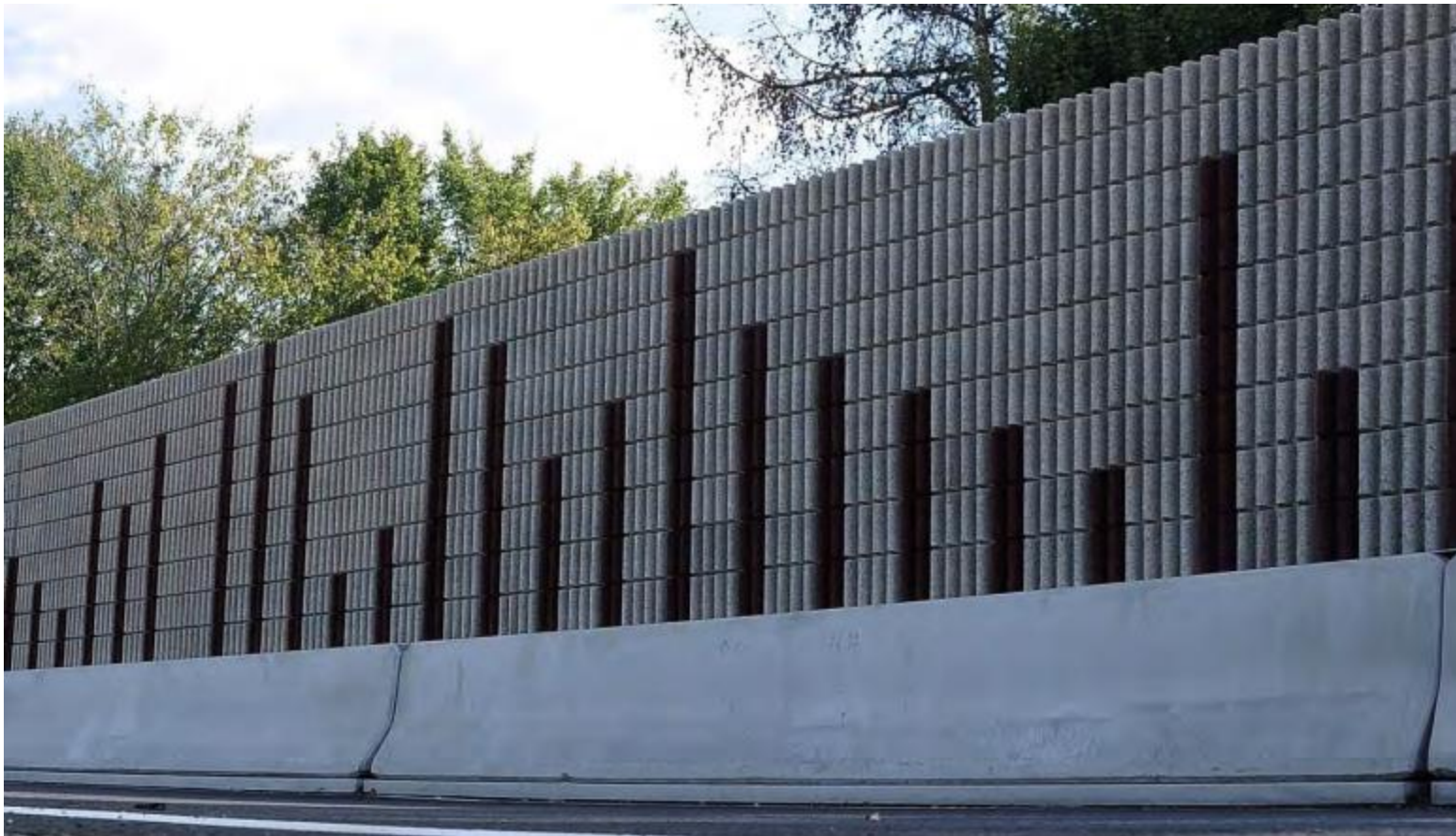


Case history:

Self standing concrete barrier
+ guard rail profile



Case history:
Fully concrete self standing barrier



Thanks for your attention

for further info pls see:

www.enbf.org



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