Noise Barriers
European Standards – CE Marking

« pauca sed matura »

C. F. Gauss

ADVANTAGE AUSTRIA WKO

Bucharest
24th sept 14

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www.enbf.org

Let's call things with their name

Noise Reducing Device??

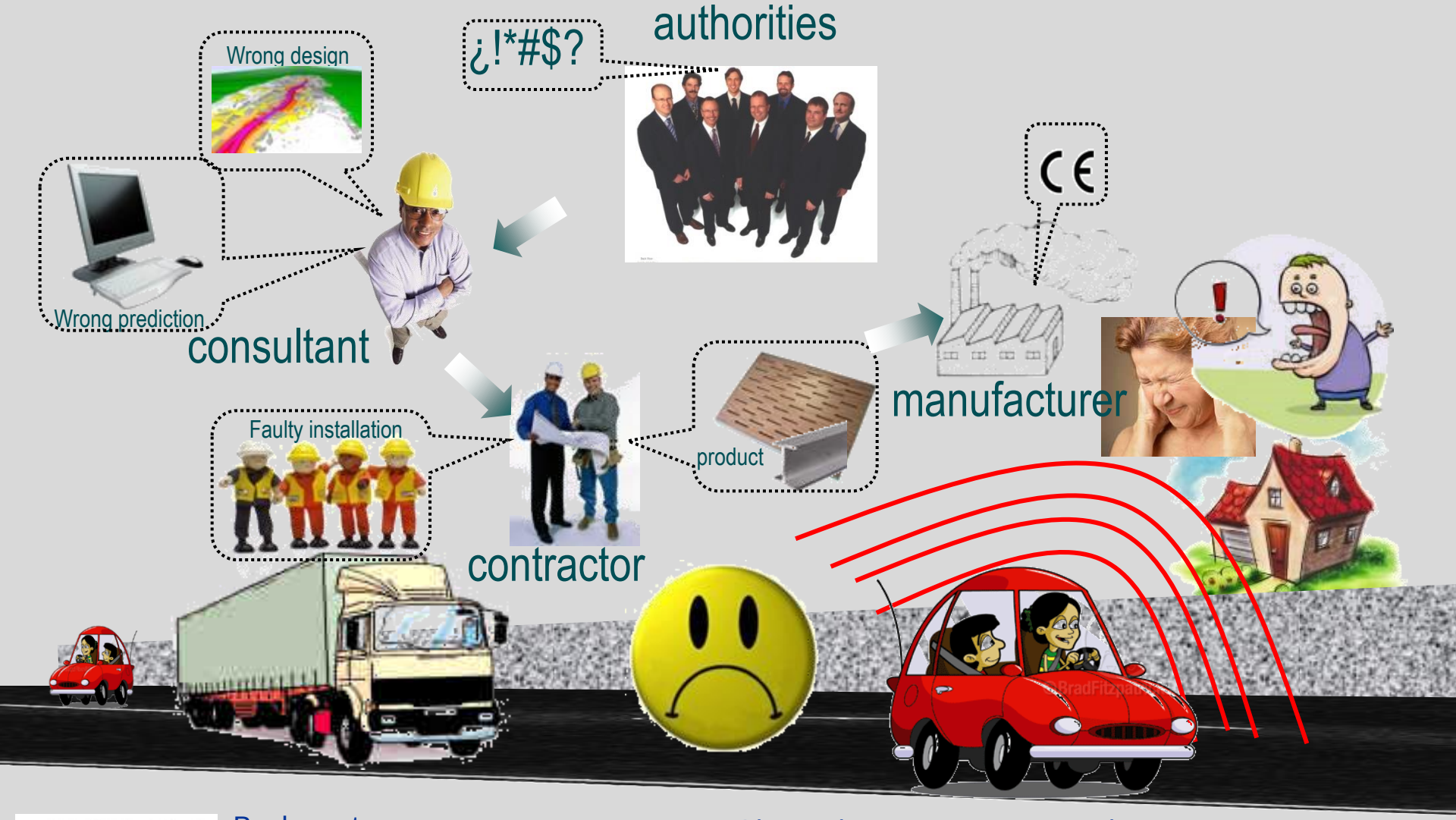
better:

Larmschutz
Barriere antirumore

Ecran antibruit
Geluidsscherm

Noise barriers

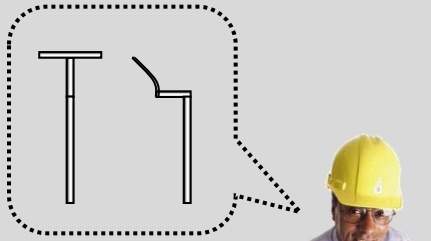
Let's make things simpler when possible !



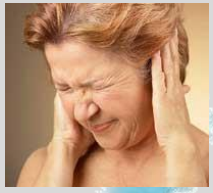
Let's make things simpler when possible !

authorities

- 8 dBA

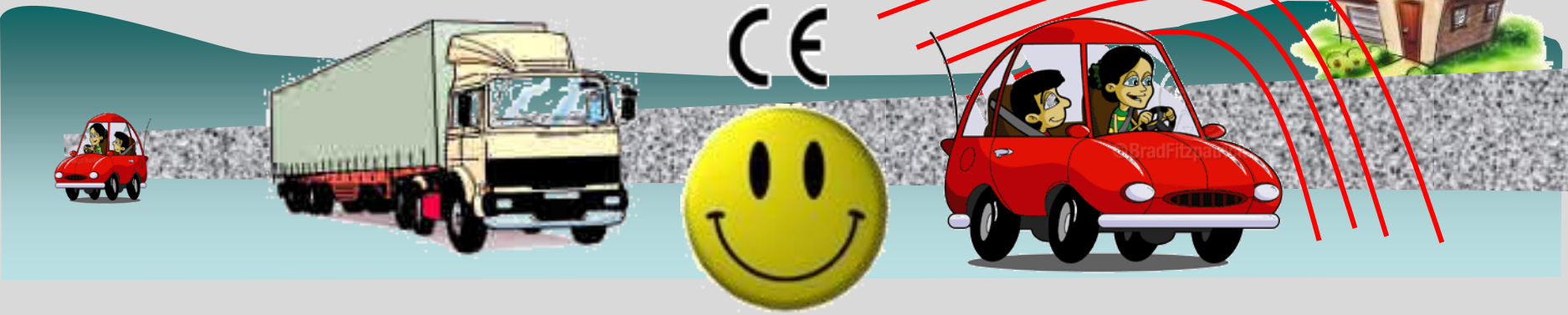


consultant



Contractor + Manufacturer

CE



Let's make things simpler when possible !

Tasks best scenario

- **Authorities : to fix the correct targets**
- **Consultant : to design the noise barrier for the expected insertion loss**
- **Contractor + Manufacturer : to construct and build the noise barrier to achieve the above target**

ENBF 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

Unione Nazionale delle Industrie delle Costruzioni Metalliche (UNICMI), Italy

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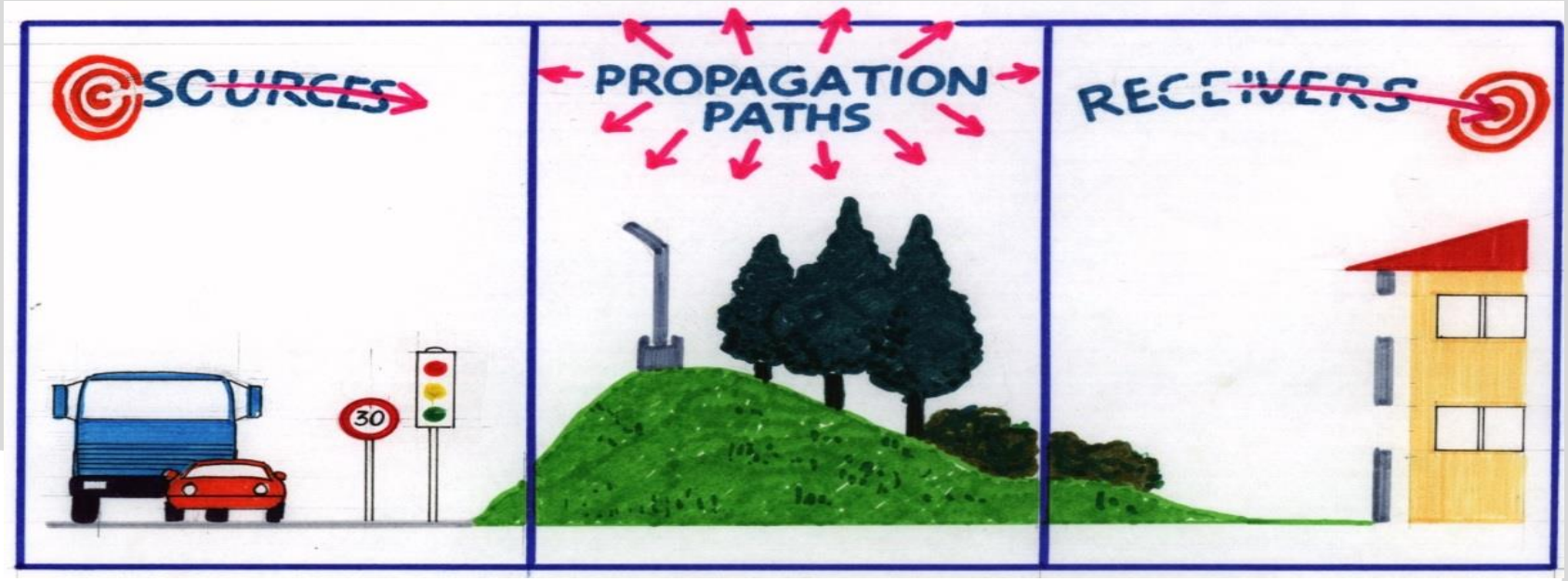
NOISE BARRIERS ACROSS EU
NEED OF MERGING EXPERIENCES

ENBF TASK N.1

To exchange knowledge and expertise on products and solutions among members of the federation

A PATH FOR EU LEGISLATION AND TECH STANDARDS



EXPECTED INSERTION LOSS VS POPULATION INVOLVED

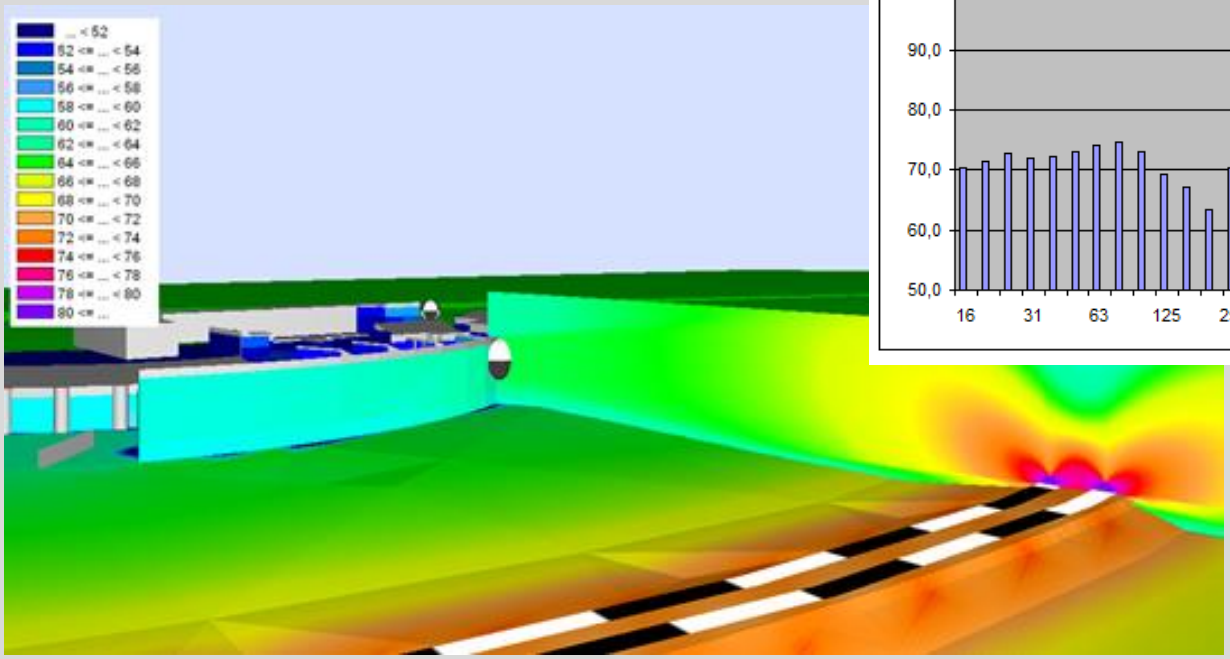
- 4 dB(A)	-10 up to -20 dB(A)	> 20 dB(A)
FOR ALL RECEVERS	FOR MANY REVEICERS	FOR A FEW RECEIVERS

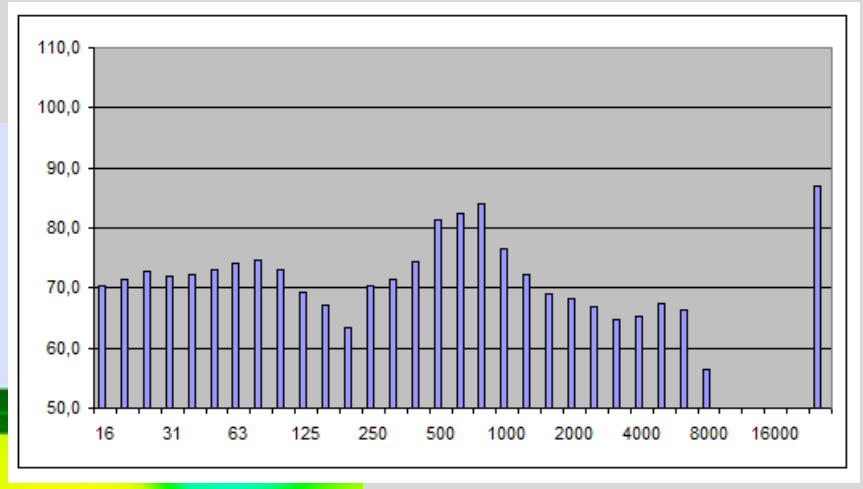
ENBF TASK N.2 - To provide informative support and cooperation to the bodies in charge of writing European legislation and European technical standards.

NEED FOR CORRECT RULES ON THE MARKET

ENBF TASK N.3 - To set up the basis for cooperation between industry, public administration and other relevant stakeholders

NEED OF CLEAR COMMUNICATION TO LARGE PUBLIC





1. **ENBF TASK N.4 - to develop communication tools in order to spread knowledge and expertise to a large audience.**

Noise barriers are construction products under CPR (Construction Product Regulation n. 305/2011) in force since July 1st 2013 instead of CPD

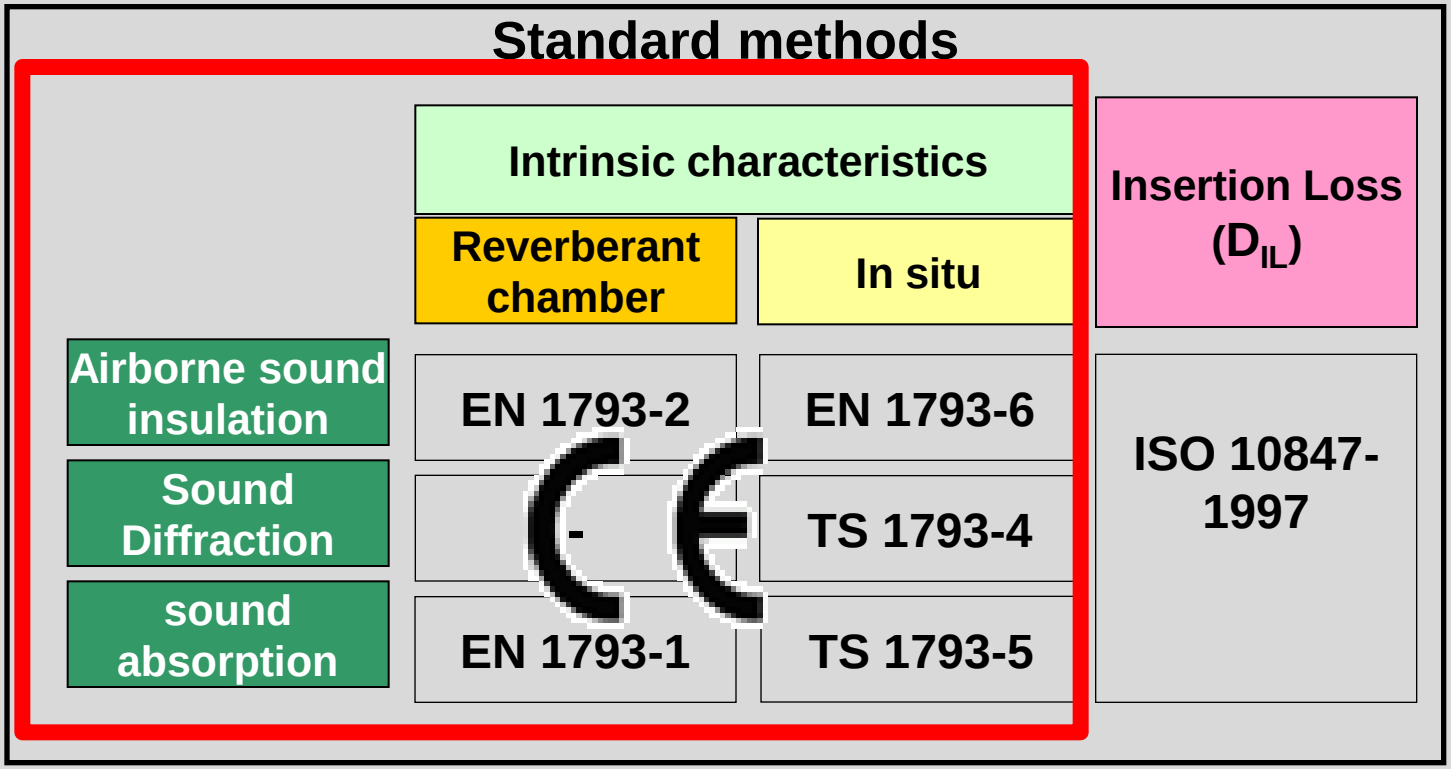
Noise barrier has to be incorporated into a road infrastructure

Noise barrier performance has to be declared versus Basic Work Requirements of the road infrastructure according to the harmonized standard EN 14388

CPD	CPR
1- Mechanical resistance and stability	1- Mechanical resistance and stability
2- Safety in case of fire	2- Safety in case of fire
3- Hygiene, health and the environment	3- Hygiene, health and the environment ***throughout the life cycle + safety of workers***
4- Safety in use	4- Safety and **accessibility** in use
5- Protection against noise	5- Protection against noise
6-Energy economy and heat retention	6-Energy economy and heat retention **Energy efficiency of construction work during construction and dismantling**
	7-Sustainable use of natural resources

ACOUSTIC PERFOMANCE

Present State of the Art on Methods for CE marking



CE marking >> DoP of the noise barrier system
Acoustic performance: insulation + absorption

Reverberant chamber method (EN 1793.1 and 2)

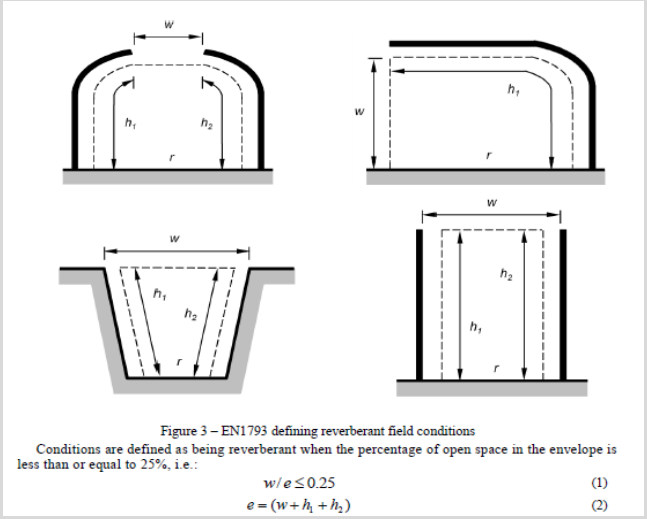


Figure 3 – EN1793 defining reverberant field conditions

Conditions are defined as being reverberant when the percentage of open space in the envelope is less than or equal to 25%, i.e.:

$$w/e \leq 0.25 \quad (1)$$

$$e = (w + h_1 + h_2) \quad (2)$$

In situ method (CEN TS 1793.5 - EN 1793.6) Evaluation to be perfomed on the noise barrier system

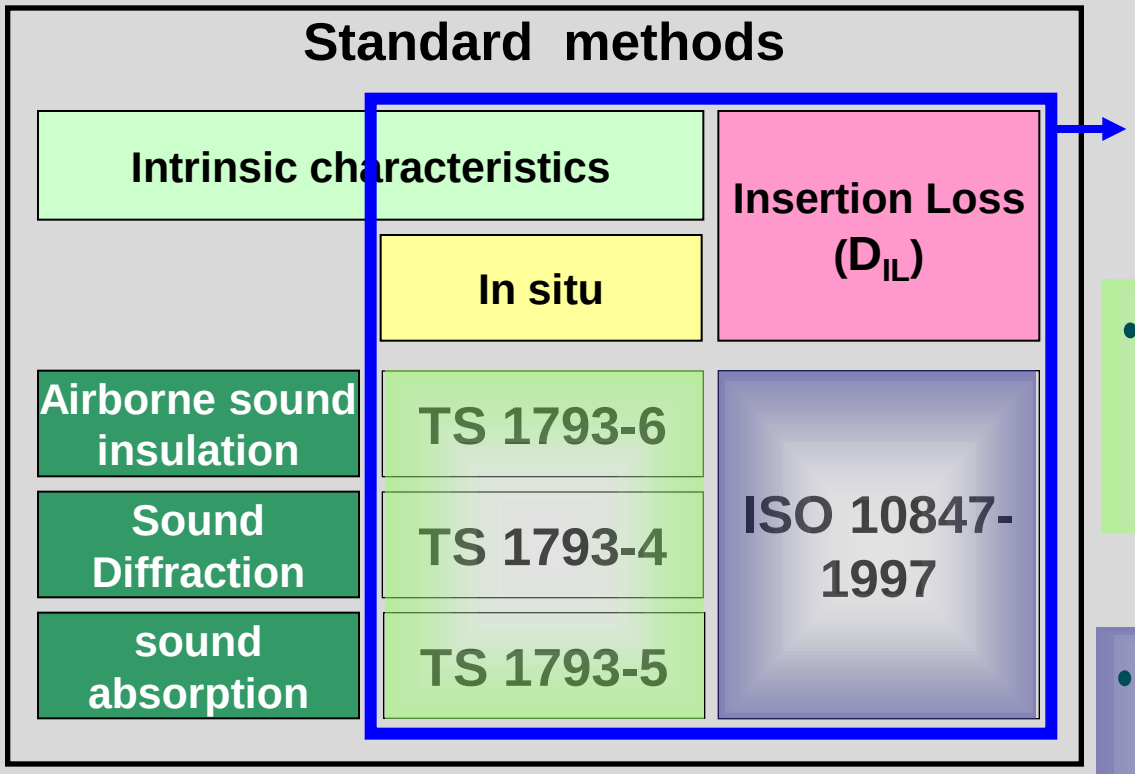
Effectiveness assessment of noise reduction

State of the Art on Methods for Qualifying Effectiveness

	Intrinsic characteristics		Insertion Loss (D_{IL})
	Reverberant chambers	In situ	
Test place	**laboratory**	**Laboratory & in situ**	**In situ**
Assess	**Product**	**Product Installation**	**Product Installation project**
Useful for design	**No**	**No**	**Yes**
Effectiveness assessment	**No**	**No**	**Yes**
durability	**No**	**Yes**	**Yes**

ACOUSTIC PERFOMANCE

Methods for Qualifying Noise Barrier Effectiveness

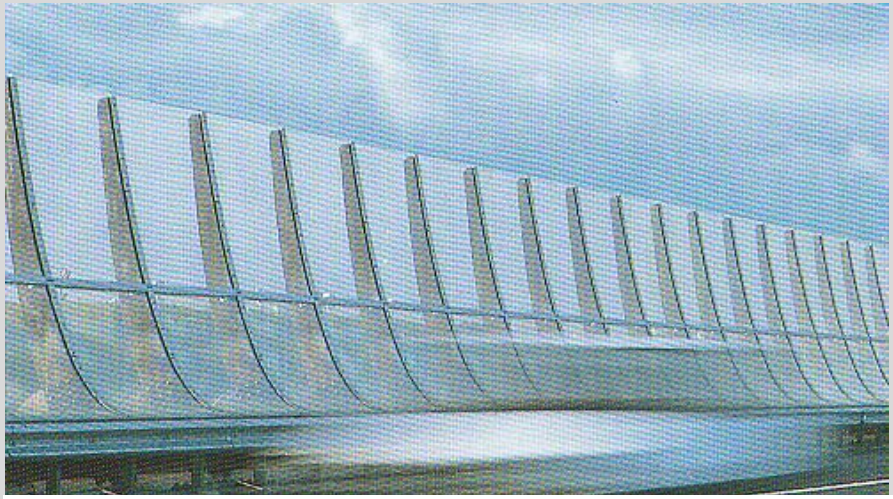


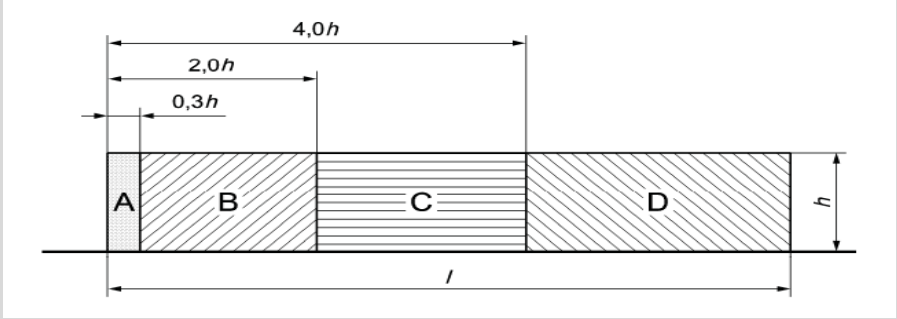
- TS 1793-4,5,6: to identify:
  - Poor materials quality
  - Faulty installation

+

- ISO 10847: to identify:
  - low project/design quality

CE marking >> DoP of the noise barrier system
Structural performance

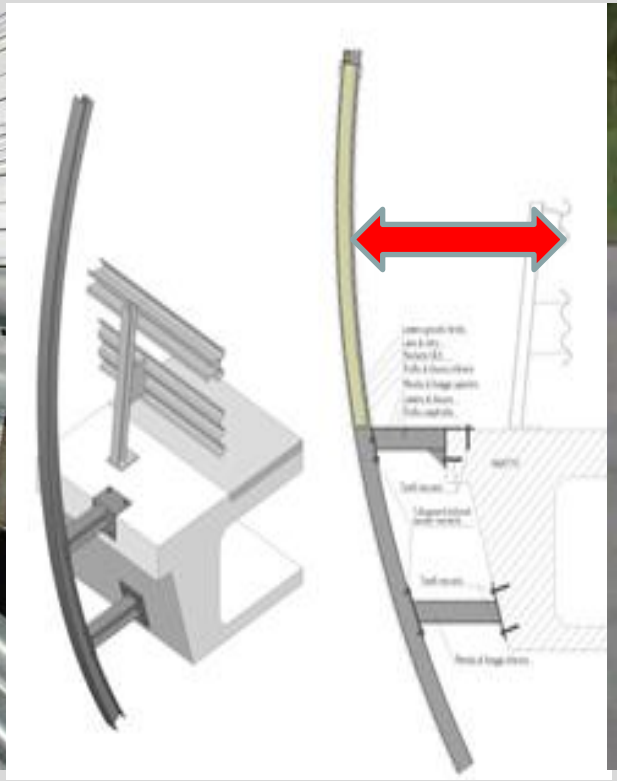




Perfomance is to be evaluated on noise barrier system with reference to:

- **Wind load**
- **Fatigue effect due to passing vehicles**
- **Shape factors at barrier edges**
- **Dynamic load from snow clearance**

CE marking >> DoP of the noise barrier system
Structural performance: errant vehicles impact



Crash test to be perfomed according to EN 1317 in case of integrated noise and safety barrier

DoP of the noise barrier system
Safety in use : behaviour in case of fire

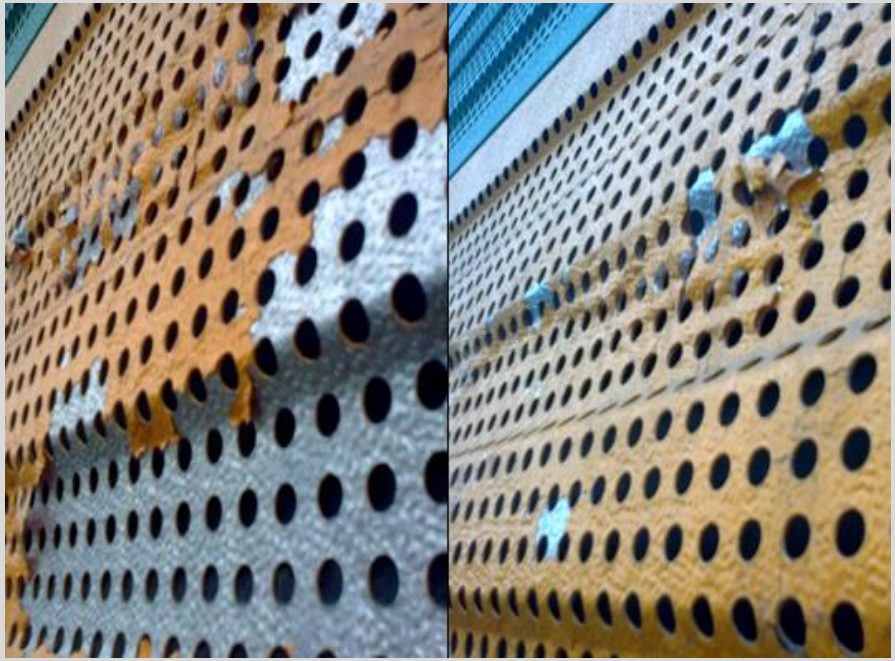
Effect of brush fire is to be evaluated according to (EN 1794,2)
Alternate materials installation to prevent from fire propagation

DoP of the noise barrier system
Structural performance: risk from falling debris

Risk from falling debris may occur in case of noise barrier installed on bridges or critical positions – EN 1794,2

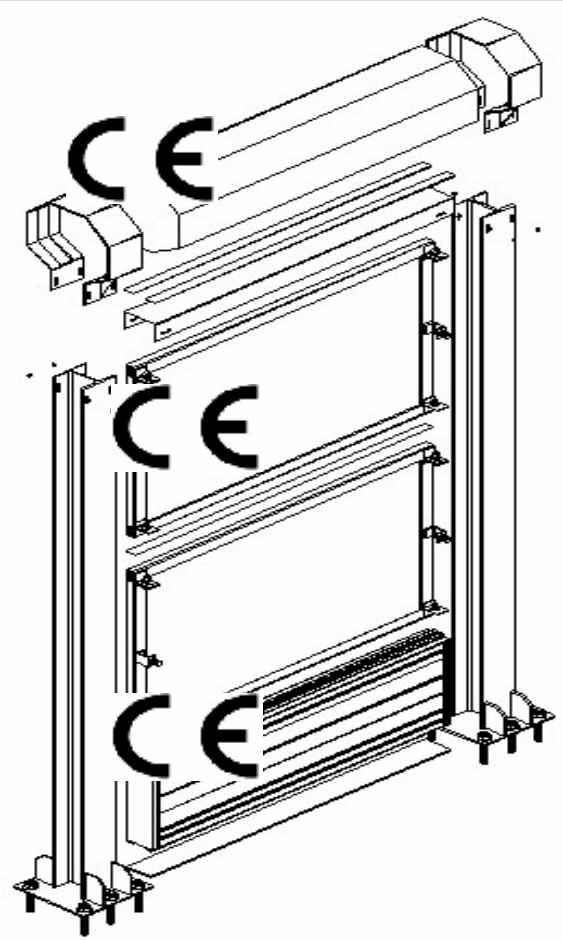
Use of intrinsic resistant materials is essential as th evaluation of performance is to be made on the whole barrier (use of safety cables, secure posts etc)

DoP of the noise barrier system
Long term durability EN 14389.1,2



Material specification (corrosion protective layers, wood treatment) are essential for long term durability. Also to be considered assembling system, water drainage..

DoP of the noise barrier system
What is CE marking?

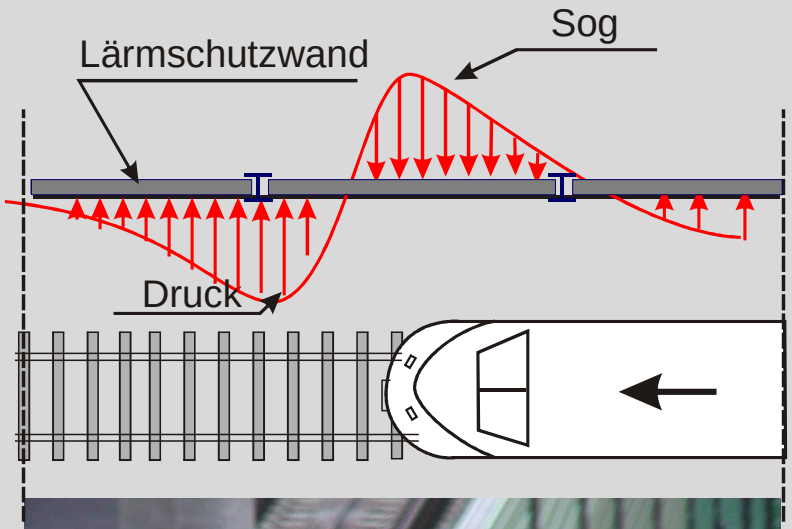


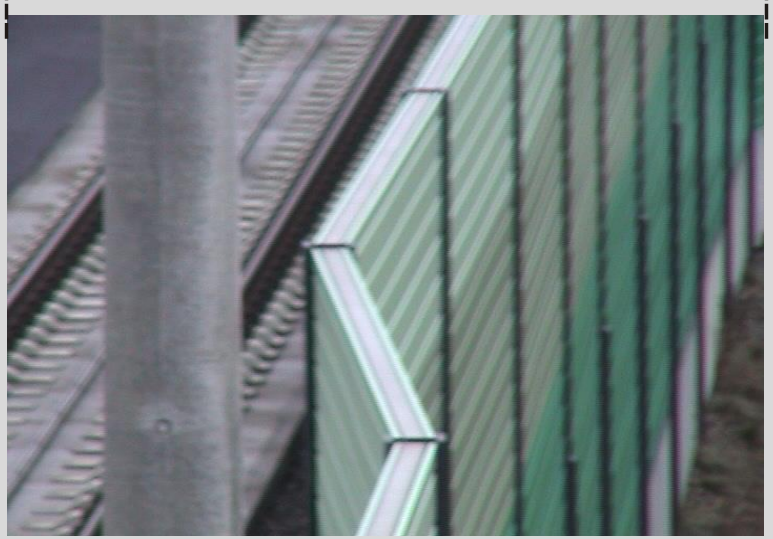
NOISE BARRIER SYSTEM is the ROAD EQUIPMENT requiring for CE marking

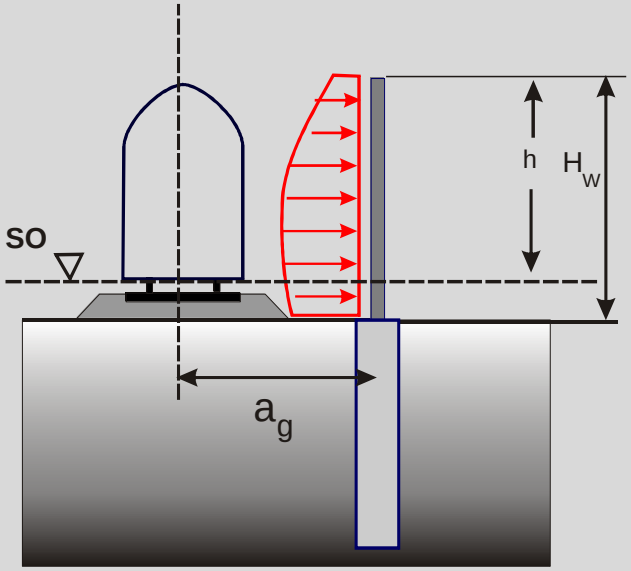
PERFOMANCE is to be assessed on the noise barrier system .

It is NOT a mere collection of single components technical datasheets

Noise barrier system - Structural performance
RAIL APPLICATION



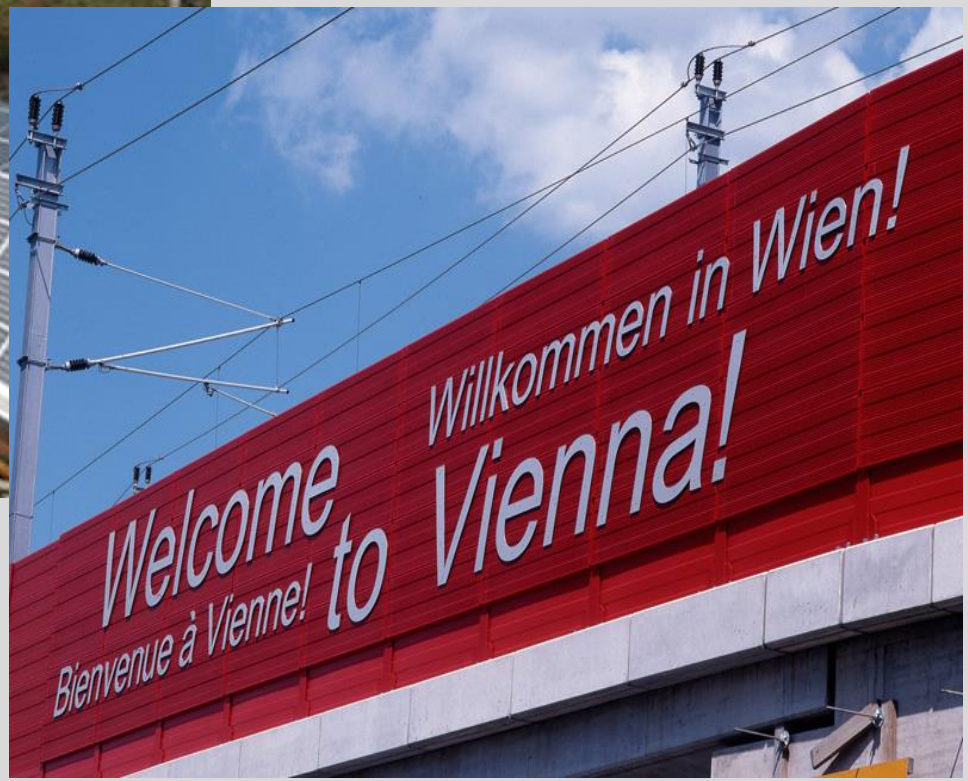




Alternating pressure and suction forces due to passing train main cause fatigue effect

Toward a protocol for Sustainability Assessment

Noise barriers are almost always payed by public funding.



Are there possible income funds to cover costs ?

Thanks for your attention

for futher info pls see

www.enbf.org