Specifying CE marked noise barriers

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Since 1st July 2013, under the Construction Products Regulation 2011 (CPR), it has been mandatory for all new noise barriers specified for use on UK (and all European) roads to carry a CE mark with a declaration of performance (DoP) in accordance with the current harmonised standard: BSEN14388:2005: 'Specifications'.

Impact of CPR

This CE mark and declaration of performance shall be provided by the manufacturer or by the company that is responsible for supplying the noise barrier product to the UK/EU market. The DoP covers the acoustic, structural and mechanical performance of the barrier as well as characteristics of environmental, safety and durability of performance.

Confusion over specification standards

Over the past three years, confusion has arisen over which version of the specifications standard – BSEN 14388 to use for CE marking. This is because a new version was published in 2015, and currently, the BSI website shows BSEN 14388:2015 as the only version available. However, this version was never harmonised at a European level and was in fact returned for substantial editing. It therefore cannot be used for CE marking of highways noise barriers under any circumstances.

On searching for BSEN 14388, the BSI shop shows BSEN 14388:2015 as *current* and BSEN 14388:2005 as *revised, superseded and withdrawn*. However, since the 2015 version was never harmonised, the 2005 version remains fully in place as the only legal document for the CE marking of noise barriers.

As of April 2019, BSEN 14388:2005 remains the only version of the standard that has been harmonised Europe-wide and referenced in the European

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CE marking in accordance with BSEN 14388:2005 is required for all new road traffic noise barrier schemes in the UK

Journal. A new version of the standard is expected to be published within the next 12 months and (hopefully) successfully harmonised in the months following publication.

Does BSEN 14388:2015 have any value?

The only value that BSEN 14388:2015 has is that it provides a listing of further individual test standards for specification characteristics which have all been published. Therefore, whilst a specifier is legally obliged to specify noise barriers that have been CE marked in accordance with BSEN 14388:2005, if they so wish, and if the client requires it, they may be able to add some of the characteristics listed in the 2015 version. **Care should be taken in this since some of the test standards in 2015 actually contradict those in the 2005 version**.

For example: with regard to airborne sound insulation:

- BSEN 14388:2005 requires all highways barriers to be tested for airborne sound insulation to BSEN 1793:2.
- BSEN 14388:2015 requires all highways barriers under direct fields (which is the vast majority) to be tested for airborne sound insulation to BSEN 1793:6 and does not permit the use of BSEN 1793:2 (which now can only be used for reverberant fields).

Acoustic differences between the 2005 and 2015 versions

The differences in the required acoustic test standards in the 2005 and 2015 versions can be summarised in this table:

Performance Characteristic	2005 Version	2015 Version
Airborne sound insulation (i) (direct field)	Characteristic: DL_R in accordance with BSEN 1793-2:1997	Characteristic: $DL_{SI,E,}$ $DL_{SI,P}$ and $DL_{SI,G}$ in accordance with BSEN 1793-6
Airborne sound insulation (reverberant field)		Characteristic: DL_R in accordance with BSEN 1793-2
Sound absorption (ii)	Characteristic: DL_α in accordance with BSEN 1793-1:1997	Characteristic: DL_α in accordance with BSEN 1793-1
Sound diffraction (iii) for added devices (barrier tops)	CEN/TS 1793-4 Not a published standard	CEN/TS 1793-4 Not a published standard
Acoustic durability	No published standard for acoustic durability in 2005	Declared product lifetime and Declared characteristic values: DL_R DL_{SI} and DL_α at the end of working life

i) The 2005 version refers to specifically dated version of the acoustic test standards (1997), the 2015 version defaults to the latest version for each characteristic.

ii) A new test standard for sound absorption in direct fields has since been published: BSEN 1793:5. This will be included in the next version of BSEN 14388.

iii) For the sound diffraction performance of added devices (or barrier tops), BSEN 1793-4 has since been published in 2015 and will be included in the next version of BSEN 14388.

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When CE marking applies

CE marking in accordance with BSEN 14388:2005 is required for all new road traffic noise barrier schemes in the UK. This includes for the complete replacement of existing noise barriers, where existing posts have not been re-used.

A question to be asked is whether there should be a requirement for CE marking for the repair or retrofitting of existing barriers. For example, where barriers have been repaired, such as gaps in barriers refilled or bays replaced due to damage or material degradation, a like for like replacement of posts and panels would appear to be sufficient.

The CE mark DoP refers to the performance of a noise barrier consisting of panels and posts in combination, therefore in the scenario where an existing barrier is retrofitted by, for example, increasing the barrier height, attaching a new absorptive cover to the barrier face, or replacing new panels between old existing posts, it is not clear how a CE mark can be provided or insisted upon where new materials are being attached to old.

It is also worth stating that CE marking to BSEN 14388:2005 only applies to road traffic noise barriers. There is not as yet an equivalent harmonised standard for rail traffic noise barriers.

Things to consider

In specifying a noise barrier for a particular road scheme and assessing a noise barrier DoP for compliance, here are a few things for the specifier and procurer of barriers to consider:

Budgeting road noise barriers

Budget estimates of barriers for road schemes normally start to be formulated at a relatively early stage of a project. Should the specifier be using budget prices for typical barrier types, either sourced in-house or provided by the client, it is very important they have confirmed that those budget prices are adequately robust and based on actual CE marked noise barrier products – rather than on basic or historical barrier prices. This will avoid potential confusion and pricing 'surprises' at a later contractual stage that might mean that projected budgets have to be changed or even that projects have to be cancelled due to unforeseen costs.

Do the acoustic tests match installed conditions?

It is important to check that the test arrangement for acoustic performance of the barrier being assessed matches the actual in-situ conditions. In the test standards for Sound Absorption and Airborne Sound Insulation it states: 'The test specimen shall be mounted…and assembled in the same manner as the manufactured device is used in practice with the same connections and seals between component parts.'

Do the acoustic test arrangements include posts?

Where posts are included as part of the construction, the acoustic test standards also require that at least one post is included in the tested specimen as illustrated in the standard. It is important to ensure that the test report shows this and is not just a test of the noise barrier panel alone.

Do the test certificates match the products?

It may be stating the obvious, but it is essential that the product referred to on the test certificate is the correct one! For example, we have come across manufacturers marketing barriers as a reflective and an absorptive version. The manufacturer then provided a certificate for sound absorption to BSEN 1793-1 for the absorptive barrier version and a certificate for airborne sound insulation to BSEN 1793-2 is then provided **for both versions**. In other words, one test had been carried out and the results **assumed** the same for both the absorptive and reflective designs. This is wholly incorrect since the sound insulation performance of the reflective and absorptive barrier versions will be entirely different. Two separate tests should therefore be carried out with different test certificates.

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