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OPTIMIZATION OF SOME ALTERNATIVES TO NOISE BARRIERS AS NOISE MITIGATION MEASURES ON MAJOR ROADS IN EUROPE. CASE STUDY OF A HIGHWAY IN SPAIN

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Abstract

There is an extensive literature covering a number of considerations for installing noise barriers to protect living areas. In fact, noise barriers are the most popular mitigation measure on major roads across Europe. This paper aims to review some situations where the use of noise barriers is not fully recommended. Fortunately, there are available wide ranges of technical noise solutions as an alternative to the barriers. What we propose in this article is to create a simple procedure to help decision makers to decide if noise barrier is the best option for noise mitigation case by case. For this, we tested some alternatives through checking the acoustic performance of “ultra-quiet” pavement like PERS (Porous Elastic Road Surface), and a combination of speed reduction with other more common quiet pavement (in this case thin layer). The results have shown that the installation of PERS is one of the most promising solutions because, as all measures were taken on the noise source, reduces noise everywhere, but PERS does it in an impressive manner. Although its acoustic properties remain good over time, the negative part of PERS is its low durability that makes increase its installation costs by having to replace it too often. The paper, in addition to efficiency and cost, analyzes the criterion of visual impact that should be part of suitability analysis of any noise barrier construction.

Key words: mitigation measure, noise barrier, noise map, traffic noise

Received: March, 2016; Revised final: June, 2016; Accepted: June, 2016

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