

Transparent sound screens made of glass for motorways and railway tracks

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Barbara Siebert, born 1967, received her civil engineering degree from TU München. After some years as employee in a consulting office, she is now working in the consulting office Ingenieurbüro Dr. Siebert with special field of application of glass. The doctor's thesis about the calculation of point helded glasses was accepted 2003.

Summary

The growing use of glass in structural engineering can not only be seen in the wide field of buildings and related applications but also in the field of bridges and motorways. In addition to a possible use as walking surface for pedestrian bridges the application of architectural glass is common for railings and transparent sound screens for noise protection. In case of sound screens for motorways and railway tracks there are additional problems reasoned in durability and resistance against dynamic loads and in case of accidents. In a first part a short overview is given about the present situation of regulations in Germany; special focus is upon the above mentioned applications in terms of sound screens for bridge building. After this a brief sketch about static analysis and details, especially for linear- and point fixed systems, follows. Finally an example is presented.

Keywords: Sound screen, glass constructions, point-fixing system, safety aspects, Finite-Element-Analysis, residual resistance.

1. Introduction

In times of increasing traffic the protection against noise and other emissions becomes more and more important. Standard sound screens made of timber or concrete (Fig. 1) reduce the noise eg. for buildings behind the sound screen. On the other hand this means an adverse effect concerning the visibility and transparency. Remedial action takes sound screen made of glass or acrylic materials. This paper will focus on constructions with glass (Fig 2, 3). It can be made a distinction between sound screens, sound embankments and combined constructions (Fig. 4). If there is not enough space or in case of bridges sound screens are used.



Fig. 1 standard sound screen

Fig. 2 transparent sound screen

Fig. 3 transparent sound screen

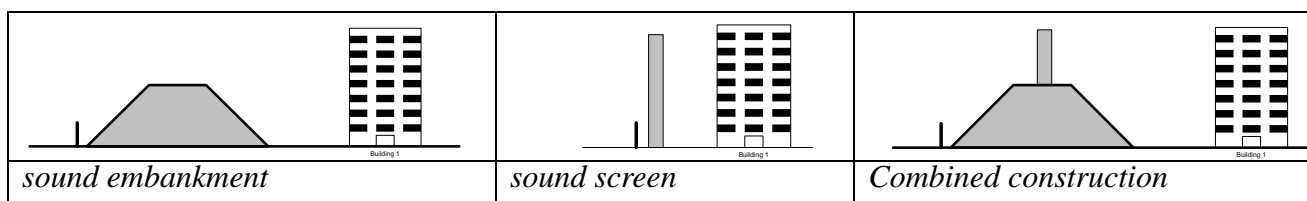


Fig. 4 different kind of constructions