

# Investigation of Anti-noise Absorptions Walls Development with Utilization of Waste from Agriculture

## Jiri Zach

Civil Engineer, Doctor  
Brno University of  
Technology  
Brno, Czech Republic  
zach.j@fce.vutbr.cz

Jiri Zach, born 1977, received his civil engineering and Ph.D. degree from the Brno University of Technology, Czech Republic.

## Jiri Brozovsky

Associate Professor  
Brno University of  
Technology  
Brno, Czech Republic  
brozovsky.j@vutbr.cz

Jiri Brozovsky, born 1954, received his Assoc. Professorship from Brno University of Technology, Czech Republic.

## Jitka Hroudova

Civil Engineer  
Brno University of  
Technology  
Brno, Czech Republic  
hroudova.j@fce.vutbr.cz

Jitka Hroudova, born 1982, received his civil engineering degree from the Brno University of Technology, Czech Republic.

## Summary

Along side with the fast infrastructure development such as highways, roads and railroad tracks there is increasing stress on protection against noise produced by these line sources.

In general it seems to be the most efficient way to reduce noise by building anti-noise walls along line sources of traffic noise. Anti-noise walls absorb the noise and protect from distribution to surrounding environment. The paper describes possibilities of use of waste from production of technical hemp for production of anti-noise walls with high level of sound absorption. Advantages of these walls are not only good acoustic properties but also lower price and utilization of environmental friendly material. The used technical hemp is easily renewable material source; technical hemp can be substituted by another similar material typical for the particular area or more easily accessible.

**Keywords:** anti-noise walls, noise reduction, sound absorptions coefficient

## 1. Introduction

Since the late 20<sup>th</sup> century there has been a rapid global increase of the noise level in the outside environment and at present in most places, it often significantly exceeds the maximum permitted values as stated by national hygiene regulations and other legislative requirements. Some of the main sources of noise in the outside environment are transport corridors (road and railway). So-called **noise barriers** which have been built in recent years around these noise sources in residential areas **should absorb this noise and prevent any spreading into the surrounding environment**. The principle of affection of the noise barriers is evident from Fig. 1.

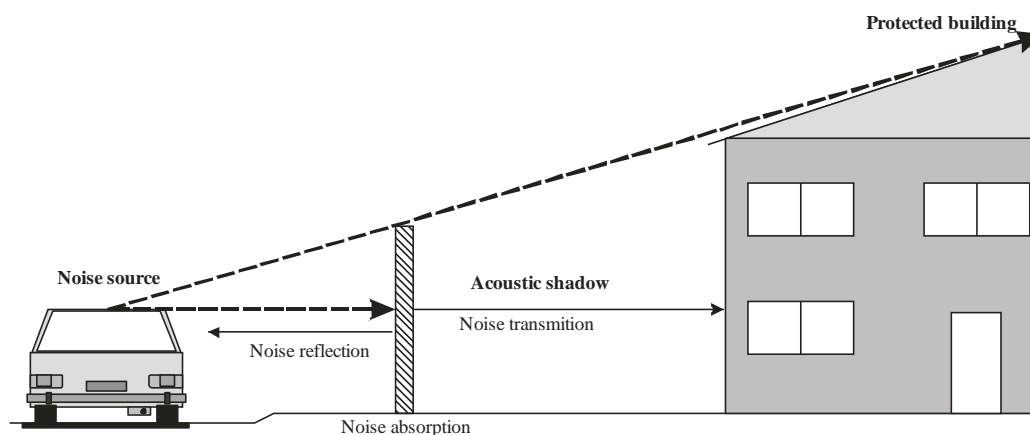


Fig. 1: Principle of the functioning of a noise barrier

The main task of these barriers is to decrease the intensity of sound waves spreading from the source of the noise. In the following areas: