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Acoustics Barrier Design to Reduce Railway Noise by Using Maekawa's Method

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Abstract : Railway noise generated by pass-by train has been described as a form of environmental pollutants especially for the residential area near the railway. Many studies have shown, that environmental noise particularly transportation noise has negative effects on people which resulting in annoyance and specific health problems such as cardiovascular disease, cognitive impairment and sleep disturbance. Therefore, various attempts are made to reduce the noise. One method of reducing such noise to acceptable noise levels is to build acoustically barrier walls. The objective of this study was to review the method of reducing railway noise and obtain the preliminary design of the acoustics barrier on the edge of railway tracks close to the residential area. The design of this barrier is using the Maekawa's method. Measurements have been performed in residential areas around the railroads in the Karawang - Indonesia with the absence of an acoustical barrier. From the observation, it was found that the railway was passed by five trains within thirty minutes. With the limited distance between the railway tracks and the location of the residential area as well as the street of residents, then it was obtained that a reduction in sound pressure level is 25 dBA. Maximum sound pressure level obtained is 86.9 dBA then by setting the barrier as high as 4 m at a distance, 2.5 m from the railway, the noise level received by residents in the settlement around the railway line becomes 61.9 dBA.

Keywords : acoustics barrier, Maekawa's method, noise attenuation, railway noise
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