

Estimation of Noise Barriers for Arterial Roads of Delhi

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Abstract : Traffic noise pollution has become a challenging problem for all metro cities of India due to rapid urbanization, growing population and rising number of vehicles and transport development. In Delhi the prime source of noise pollution is vehicular traffic. In Delhi it is found that the ambient noise level (L_{eq}) is exceeding the standard permissible value at all the locations. Noise barriers or enclosures are definitely useful in obtaining effective deduction of traffic noise disturbances in urbanized areas. US's Federal Highway Administration Model (FHWA) and Calculation of Road Traffic Noise (CORTN) of UK are used to develop spread sheets for noise prediction. Spread sheets are also developed for evaluating effectiveness of existing boundary walls abutting houses in mitigating noise, redesigning them as noise barriers. Study was also carried out to examine the changes in noise level due to designed noise barrier by using both models FHWA and CORTN respectively. During the collection of various data it is found that receivers are located far away from road at Rithala and Moolchand sites and hence extra barrier height needed to meet prescribed limits was less as seen from calculations and most of the noise diminishes by propagation effect. On the basis of overall study and data analysis, it is concluded that FHWA and CORTN models under estimate noise levels. FHWA model predicted noise levels with an average percentage error of -7.33 and CORTN predicted with an average percentage error of -8.5. It was observed that at all sites noise levels at receivers were exceeding the standard limit of 55 dB. It was seen from calculations that existing walls are reducing noise levels. Average noise reduction due to walls at Rithala was 7.41 dB and at Panchsheel was 7.20 dB and lower amount of noise reduction was observed at Friend colony which was only 5.88. It was observed from analysis that Friends colony sites need much greater height of barrier. This was because of residential buildings abutting the road. At friends colony great amount of traffic was observed since it is national highway. At this site diminishing of noise due to propagation effect was very less. As FHWA and CORTN models were developed in excel programme, it eliminates laborious calculations of noise. There was no reflection correction in FHWA models as like in CORTN model.

Keywords : IFHWA, CORTN, Noise Sources, Noise Barriers

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