



Development of Traffic Noise Prediction Model in an Educational Urban Area

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Abstract

This paper studies the problem of noise pollution on the roads of the campus of University of Baghdad in Baghdad, Iraq. Due to the continuous redevelopment process conducted on the masterplan of the university, the noise levels have significantly impacted the education environment. The purpose of this paper was thus to study the sources caused and maximized the noise levels at the campus and also formulate a prediction model, identified the guidelines used for designing or developing future campus masterplans. Then, the noise levels were measured based on three variables: skid number, vehicle speed, and distance from the classrooms at seven selected points of the main ring road surrounding the university campus. Finally, the finding has shown that the classrooms' locations of the new urban additions, built in the last two decades, were laid out in the prohibited distance of road-traffic noise. In addition to that, it has confirmed that students studying in these classrooms are exposed to noise levels beyond the legislative norms and codes. Further, studying the alternatives used to improve the performance of the education environment in the existing campus of University of Baghdad can be considered in the future research directions.

Keywords: Traffic Noise; Noise Pollution; University of Baghdad; Campus; Urban Area.

1. Introduction

Nowadays, all Iraqi university campuses are located close to the car and bus routes and continuously suffered from road-traffic noise levels, mainly in the recent years. Some of university buildings were defined by the boundaries of street layouts, while the others laid out based on standard distances found in the masterplans. The majority of these masterplans was adopted from Western design codes and norms driven from the European and American campuses such as the University of Baghdad (UB) [1, 2]. Then, the masterplans of university campuses were evolved and developed by local architectural groups (consultants and practitioners) authorized by Iraqi government institutions.

One of the most important periods in the evolution of university campuses' masterplans was when the democracy arrived, after 2003 when the funds were available, embraced some democratic ideals that wanted to express sentiments of freedom and openness of mind through the development of the built form of universities. With the unprecedented expansion of university campus in UB, the main focus of campus leaders was towards individual buildings rather than master plans, which underwent to standards. Urban developments at the education zone – i.e. areas inside the main ring road – of the masterplan increase the activities and traffic. So, instead of expanding outwardly of the main ring road or including adjacent lands, the new additions were occurred inwardly. As a result of that the education zone has become much denser and noisy. The density was happened by turning open spaces (green and public areas) into new building

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